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Teaching problem-solving in teams

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TEACHING PROBLEM-SOLVING IN TEAMS

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SUMMARY

The main consideration in this thesis has been to show that the utility of problem-solving techniques relates directly to the context and method of teaching.

I have reviewed the relevant field literature, and aspects of problem-solving related to current educational theories.

The original action-research approach developed in stages, most notably through two experimental in-service training courses in 1983, and 1984. Both events saw the development and testing of simple procedures and exercises, utilising aspects of group dynamics as a mechanism to enhance learning.

The other aspects of my research project include: the transfer from military to civilian management training; the distillation of key problem-solving processes, and the evolution of my micro/macrotask system. In other words: simple, phased learning objectives practised indoors on small tasks by teams, followed by practical teamwork exercises in the outdoors.

This system is now the main tool in my commercial consultancy work.

I also discuss and review key areas, student, observers' and instructors' feedback, and the transfer of these simple techniques back into students' working lives.

Acknowledgements.

My grateful thanks are due to:

Doctor Cyril Selmes, who let me run on a long lead.

Philip Stonier, who toiled with me in the vineyard.

Jerry Mahoney, who trusted me, and gave me access to a new professional audience to play my games with.

The indomitable Junior Leaders, who kept asking. "why?"

All the Burnham Lecturers, who taught something new, consistently, and with such enthusiasm.

The Ministry of Defence, for all the opportunities to learn.

Diana, my wife; and Philippa, my daughter -who grew up with this project and who explains it the best.

CONTENTS: TEACHING PROBLEM-SOLVING IN TEAMS

Chapter 4: Enter The Master

Chapter 5: The Medium is the Message

Chapter 6: The Macrotask Development

Chapter 7: Going Public

Chapter One: Introduction

The purpose of this first chapter is to set the scene for the thesis.

I decided to develop my research within the action-research mode as described my Cohen and Manion (1980), since it seemed the closest fit to my situation and interests at that time, in offering me the freedom to

1   Initiate incremental procedural changes on a concrete problem of my choice, changes guided by a variety of feedback mechanisms, bringing about "lasting benefits to the ongoing process itself rather than to some future occasion", and

2   Study the situation without attempting to identify one particular factor in isolation, or to divorce it from the context which gives it meaning.

3   Apply the findings, immediately.

The subject of this action-research is the development of operacy - the problem-solving skills needed for doing (de Bono, 1982). This research covers the continuous development of procedures and approaches to deal with the problem of developing operacy, initially among Junior Leaders in the Regular Army, and later on, mature students on management development programmes.

The initial focus of my research was the development of a simple, leadership training programme which would emphasise the primacy and generalisability of simple problem-solving processes.

Earlier research (Newman, 1983) had shown me that the medium of learning tended to be seen as the message itself; in other words: that students tended to remember the problem, and not the process used to solve it.

The significance of this work lies in its identification of the obstacles which can maintain problem-solving as something we know about, and not as something that we do.

This thesis draws upon over 5 years of experience, employing the methodology (see Methodology Map, over) of questionnaires, process proforma, student exercise grading sheets, interviews with participants to check the validity of my observations, videos and transcripts of different exercises (experimental, INSET and student), and reviews, observations recorded on tape immediately after sessions, agenda of meetings with co-tutors, my personal learning experiences, illustrative anecdotes, and note- taking as part of my continual process of personal, reflective learning.

The thesis is divided into 9 chapters:

1   Introduces the action-research approach and some key ideas.

2   Links previous research (1983) with an experimental INSET: "Leadership as a Skilled Performance", the idea of which was to strip leadership processes out of their military contexts and to think of them as teachable skills.

Methodology Map

Date	Key Event	Methodology Employed
May '83	M.Ed dissertation	1 -7.
June	INSET (B'ham Beeches)	1,3 -5,7,8,12.
Feb '84	Task-Oriented Group Problem-Solving Project begins at Colerne.	1 -10.
May	Jackson INSET	1 -9, 12 -13.
July	Guardian article published	
	Jackson INSET reunion	
Feb '85	View article published	
April	Swindon College - first civilian event	1, 4 -10.
June	TOGPSP Seminar, Bath University	1,2, 7 -8.
Nov	links with Wiltshire Area Management Centre & Harrow Coll. of H.E.	1, 5, 8 -11.
June '86	Kodak link begins with Team Management Skills & Personal Development Programme.	1, 9 -11, 14.

Key:

1. Personal note-taking during and after the event.
2. Literature review.
3. Interviews with participants during the event.
4. Interviews with participants after the event.
5. Feedback questionnaire to participants.
6. Use of student process proforma during event by observers.
7. Video recording of exercises, interactions, reviews.
8. Open exercise reviews.
9. Use of developmental micro/macrotasks.
10. Microtask reviews by triads.
11. Use of printed AFCOP/TT format sheets.
12. Participant design of new developmental problems.
13. Participant design of own problem-solving processes.
14. Use of problem-solving process by participant on "owned" work problem.

3   Covers the development of my research into thinking,
problem-solving, leadership, group dynamics, the sociology
of knowledge, and aspects of learning theory.

4   The INSET led by Professor Keith Jackson, the
experimental use of my new micro/macrotask approach, and
the continuation of the theme of leadership as a skilled
performance.

5   A tour through the microtask system from a student's
perspective, and a brief history of microtask development.

6   The macrotasks, their development and effect upon the
microtasks, the linkage between both stages, the
development of systematic feedback on students' use of
process within the macrotasks, macrotask skills profiling
and the identification of key factors in successful
macrotask design.

7   The move out of the military environment, into
civilian management development, feedback and experiences
from these early events, the "Guardian" and the "View"
articles.

8   The commercial context of problem-solving, management
development, the realisation of the primacy of problem-
ownership as a key motivator in learning and applying
problem-solving processes.

9   Review and summary, achievements, recommendations and
application of research in a new environment.

Most psychologists agree that a problem has certain key
characteristics:

     Givens - That the problem begins in a certain state.

     Goals - The desired result or final state.

     Obstacles - The problem-solver has access to means to

     achieve the goal, but the correct sequence of

     behaviours, which will solve the problem, is not

     immediately obvious.

There is something very special and satisfying about
working in teams, in the experience of teamwork. This
thesis is about how the goal of teaching the skills of
action within a teamwork context led to an increasing
awareness of both the "givens", and of tools to
overcome the obstacles involved.

My approach identified two largely defensive obstacles to
the operational use of problem-solving process to achieve
goals:

Firstly, that the way in which we have "treated" or
processed information in the past determines its future
use.

Secondly, that the ability to use information correctly
varies with the individual's tolerance of stress.

     In order to reduce this stress or anxiety when
confronted by a problem, we often apply a "robot"
mechanism, which leads to selective use of information to
support a hypothesis that happens to be wrong; in other
words, we see the problem we want to see, or we interpret

the problem in terms of available repertoire.

The development of problem-solving skill is rather like going on an expedition into unknown territory, into a no-man's land: there is a robot tendency to shoot first, in order to reduce the anxiety of dealing with the unknown.

To put it more simply, we apply our robot in order to maintain the shortest gap possible between the goal and the givens, to avoid the stress of really looking at the no-man's land, the potential battlefield between the two.

An answer to this knee-jerk robot is to develop an artificial tool, slowing down the sprint to apply our "simple" robot; to lengthen the gap between goal and givens by developing a differentiated, flexible robot which will explore this area, becoming acclimatized to its stress, creatively using its sense of "exposure".

We develop a new way of dealing with information, to paraphrase Gordon (1961): we make the familiar strange, by slowing ourselves down, suspending judgement and making the strange into something familiar, by cutting up the problem according to a routine.

The application of problem-solving to achieving teamwork allows the development of a temporary bridging social context for the application and learning of problem-solving techniques. This use of learning teams allows the steady growth of an accessible, differentiated robot which can be used creatively, but perhaps equally important,

enables students to experiment with the acquisition of

what is often a new social role, through practising the

language and ownership of problems, actions and results.

Chapter Two: Starting Out.

By the beginning of 1983, I was coming to the end of my M.Ed dissertation, the subject of which was the development of a limited leader training intervention within the Junior Army, placed within the context of prevailing attitudes towards Leadership training within the British Army (Newman, 1983).

Background

The overt transmission of leadership culture within the British Army is carried out in four phases:

1   The Regular Commissions Board (RCB).

2   Rowallan Company.

3   Functional Approach to Leadership.

4   Apprentice/Officer Modelling.

In 1942, a group of psychologists and psychiatrists were asked to devise a new method of officer selection, removing the traditional veto from senior officers. Major W.R. Bion, the originator (Bidwell, 1973) of the War Office Selection Board (WOSB), introduced a variation upon the German Luftwaffe selection system (Galland, 1953).

Bion believed that the officer-interview conducted under stress, and evaluation of individuals within leaderless groups tasked with a problem, would strip away the artificiality of the WOSB.

With the end of the Second World War and later, conscription, WOSB discarded its psychologists, replacing them with serving senior officers and calling itself the

Regular Commissions Board.

Rowallan Company was developed simultaneously with WOSB and involved a ten-week toughening-up for candidates regarded as borderline risk-cases at RCB. But as Adair (1968) pointed out, "much of what passed as leadership training was, in fact, only an extended form of selection."

Adair's functional approach (1968) is a concentrated course of nine periods, which superseded (on paper) the older "Qualities" approach by 1963. At all times, Adair's overlapping needs analysis model of task, group maintenance, and individual needs is applied as an analytic tool to group processes leading towards a goal being achieved. This course is complemented by ten periods of lectures upon morale, discipline, loyalty, individuals and the qualities of military leadership. Adair's programme presents the students with the problems of:

1   Defining leadership behaviour.

2   Observing a group process involved in an outdoor task.

3   Commenting upon a military film portraying successful and unsuccessful leadership.

4   Role-play around a morale-failure within a unit.

5   A leader's organisational constraints.

The apprentice, or learning-on-the-job role-modelling is carried out by a formal system of rotating command and

prefect/monitorial appointments assessed by Directing

Staff appointed to assess and supervise the officer-

cadets' training. This system of appointments is not

always strictly administered; for instance, it has been

known for cadets to complete a course with only a minor

exercise appointment to their credit, or for conspicuously

less able cadets to escape a high-profile command

appointment because resolving the ensuing muddle and

confusion would delay the scheduled end of the exercise.

Naturally Adair argues that the Royal Military-

Academy, Sandhurst (RMAS) system implicitly illustrates

and confirms leader behaviour, but the most important

element of leadership training during the Standard

Military Course (SMC), or Standard Graduate Course (SGC)

at RMAS, lies not in the limited application of the three-

needs model but in the socialisation which the institution

enforces upon individuals already selected as easily

socialisable. Adair points out that "there is a take it

or leave it" element in his course, suggesting that RMAS's

transference of leadership may be more implicit than

explicit, commenting that

> "one sometimes finds that those who claim not to
>
> entertain any "abstract" ideas about leadership in
>
> fact hold the "Qualities" approach as an unexamined
>
> and largely unconscious assumption which is then
>
> passed on almost accidentally to others with neither
>
> hearer or reciever being entirely aware of the
>
> process. Even an institution which taught nothing to

its junior members about the nature of leadership would in reality be advertising a theory, namely that there is nothing worth teaching."

The most consistent factor in all four phases of leadership development is the "Qualities" approach (Adair, 1968).

The "Qualities" taxonomic approach involves the consideration and application of 15 official leader "Qualities":

1   Planning ability

2   Practical ability

3   Physical ability

4   Coolness

5   Sense of urgency

6   Dominance

7   Liveliness

8   Initiative

9   Determination

10   Military compatibility

11   Sense of responsibility

12   Awareness

13   Quality of personal relationships

14   Range of personal relationships

15   Maturity

The "Qualities" approach (see Annex A, "Qualities Looked For At RCB, pages A.1-2) is used in assessing performance throughout all phases of leader training, and betrays a

primary interest in leader _style_, the underlying message

of which says "leaders are born, not made."

The implications of this attitude are clearest in

Rowallan Company, whose motto: "Develop character first,

and military leadership will follow", is exercised through

a curriculum consisting of anecdotes, character-building

activities designed to develop mental toughness through

crisis-management, compounded by a misidentification of

the original WOSB (and later RCB) group task _means_ of

officer-selection, as a training end in itself (Newman,

1983).

This "Qualities" approach - if indeed it is an approach is

> "ill-suited to act as a basis for leadership
>
> training. Intrinsically it hardly favours the idea of
>
> training at all.. the ability to recognise a born
>
> leader becomes all important, and attempts to "make"
>
> leaders are viewed with suspicion." (Adair, 1968)

This confused culture of military style-acquisition has

its parallel in anthropological accounts of rites of

passage, and Cynthia Enloe's (1980) historical study of

how marginal cultural groups saw military group membership

as a means of legitimising their possession of a doctrine

of conflict which was itself a product of competition for

survival with other marginal social groups.

In 1939 (Ellis, 1982), 84.3% of Sandhurst entrants

were public schoolboys, 40% of whom were themselves sons

of military professionals. By the end of the war WOSB

meant that officer-candidates within Officer Cadet Training Units (OCTU) were 25% public schoolboys, and almost 75% from grant-aided grammar schools.

The major difficulty of introducing a different approach toward leader development, or even training, is that all officers within the army have endured a version of this four-part rite of passage, mentioned at the beginning of this chapter. Accordingly, when given the opportunity to design a leadership training situation, they will themselves tend to select and present a version of their own experienced crises from the four phases, as a kind of encapsulation of leader culture, a symbolic illustrative gestalt.

This explains why there are probably as many views about leadership theory as there are officer Directing Staff at RMAS! (Potter, 1982)

Interlude 1.

During a NATO parachute brigade exercise one summer night in 1974, I found myself entangled with another parachutist: both of us were heavily laden with over 100lbs of specialist equipment and ammunition. In spite of the fact that we could not see each other in the darkness, we both reacted correctly; abandoning equipment and using his reserve parachute (he was above me), we separated and my main parachute inflated at under 200 feet. Throughout the fall, we had both assessed the situation, decided how to react (even though we could not

see each other), spoken to each other to confirm our co-ordinated responses (in other words: that I wasn't going to inflate my reserve 'chute and thus compound the failure of his main 'chute) and acted together. We both survived. We had dry-rehearsed similar but not identical situations in harnesses suspended from the training hangar ceiling, but never in darkness.

It occurred to me later when considering leader training, that if I had been trained to parachute via a parachutist's "qualities" approach, or a functional theoretical observational approach to parachuting, I probably would have been dead. Under such a regime, I might have attempted to assimilate the outward behaviours of a good parachutist, but would have acquired little of the practical skills.

My account (1983) of the Team Leader approach to leadership training described how a prescriptive open-culture two-phase learning system had been developed, heavily influenced by Argyle's motor skill model (1972), and Musgrove and Taylor's (1972) review of research upon pupils' expectations of teachers which found that

"when the teacher is taken as a model of social attitudes and behaviour, this may be because he is failing to communicate knowledge and promote understanding. Modelling may in fact be a retreat from skill acquisition to style acquisition. The more peripheral and irrelevant qualities of the

teacher may be seized upon precisely because the intellectual content of his work is difficult to grasp."

The result of both influences (Argyle and Musgrove & Taylor) was a linking in my own mind, of the phenomenon of teacher style-acquisition or behavioural modelling in students, to a poor teaching method.

Students were prepared for a practical, outdoor exercise by having a simple problem-solving and task-presenting process detailed and demonstrated once within the classroom. These processes were practised through each student leading a task on the outdoor exercise, followed in every case by a feedback session concentrating upon the student's use of the specific processes described within the classroom. In spite of the apparent success of the system, only a minority were successfully completing the outdoor tasks within the criteria written into each practical task. I began to think that this might be a product of a flawed teaching method. Student feedback clearly showed that for the students, the most effective learning environment had several basic criteria:

1   Outdoors venue.

2   Multi-phase problems involving an analysis of priorities, delegation of sub-tasks, and time-limits.

3   Teams of no more than five, led by leaders who had information-power through being the only person in the team who had been briefed, and who were familiar with the

area and special techniques involved.

4   Consistent, structured feedback by neutral Directing
Staff (DS), involving the leader and the team together,
confirming the learning points.

The linking of both:

a) student feedback, and

b) the idea of the leader as a practitioner of specific
process skills, to the evident weaknesses of the
prevailing style-acquisition mode of leadership training
within the Army, made me decide that it was timely to
begin to strip the leader processes out of their military
contexts and to begin to think of them as teachable
skills.

The students' post-exercise feedback (summarized
above) suggested that the best learning environment was
the outdoors. Unfortunately the logistics, weather and
organisational constraints meant that we could not just
simply transfer the initial "indoctrination" phase to some
outdoor exercise venue, and it seemed to me that this
insistence upon the outdoors was due to its' effect of
enhancing military student self-image through being an
escape from a classroom environment associated with past
failure, previous attitudes and roles, dependency or
subsistence-learning with little student autonomy.

The Junior Leaders looked to the Army to provide them
with some process of personal change. They had high
expectations that this total institution (Goffman, 1968)

would provide them with some rite of passage that would
bring about a signal metamorphosis, solving the adolescent
problem of dependency as neither adult nor child (Illich,
1973). They joined the Army to grow up - to be supplied
with the answers to many typical adolescent problems:

Lack of personal confidence.

Lack of experience of self-presentation.

A need to know how to operate as an individual member
of a team.

Lack of experience of actual "leading" - its'
pressure and loneliness.

They had high expectations of the Army and found
themselves puzzled by both the lack of evidence of day-to-
day leader processes (apart from shouting), and the
obscurity of those formal theoretical processes
encountered in a classroom. Talking about leadership in a
classroom made it part of a learning continuum to which
they had already-entrenched attitudes. It was seen as a
discredited learning environment, largely a "waste of
time", what they wanted was practical, real-time action
learning.

The outdoors was attractive because of its' overtones
of initiation, of "special", designed training locations,
and a freedom to escape from the limitations of old roles.
Basically, to the students, the Junior Leaders, the forest
was an untainted environment. I had to accept the
organisational limitations upon training and save the

outdoors as an expensive arena for the student to look

forward to. But it did occur to me that the other factors

listed, might provide some useful clues. Looking back

over both the formal and informal post-exercise feedback

collected, a common element was an expressed preference

for action. If we could act, and learn at the same time,

perhaps this might be the key to an improved teaching

method?

Towards Microteaching.

Mcknight's (1971) review of teacher microteaching

impressed me with its emphasis upon teacher skills being

identified and developed through feedback and practice. If

we couldn't do all our learning outdoors, couldn't we

identify the processes practised outdoors in teams and use

small problems to specifically exercise specific skills

and provide the source of learning, corrective feedback ?

Experimental INSET at Burnham Beeches.

At the beginning of the Summer term in 1983, I was visited

by Peter Lewis, a Royal Army Education Corps (RAEC) Major

who was Technical Development Advisor (TDA) in the

Headquarters of the Army Education Services (HQ AES)

within the HQ United Kingdom Land Forces (UKLF).

A significant part of Peter Lewis's brief was to keep

an eye on education and training developments within

Army education establishments in the UK and also to

organise a programme of in-service training and up-dating

events for appropriate Ministry of Defence staff, civil

and military. Peter Lewis was in the process of completing an Educational Technology Masters at the University of Surrey, and like me, interested in good educational practice. Peter visited me and asked about the theory behind the existing leader training programme. I explained the system and detailed my views as to the limitations and sources of the prevailing leader style-acquisition culture. It seemed that I was articulating something Peter had been aware of since his own attendance at RCB, and later at RMAS. I also explained that I had serious doubts about my present approach being more than just yet another disguised, selection system. At this point, (as a possible strategy) I sketched out on a blackboard a variation on the microteaching idea, but applying it to the teaching (though learning, is more appropriate) of leader process skills. In order to underline the practical interpretation of leadership, I suggested a particular experimental, sequential teaching model of leader skills (SLSTM: Newman) which seemed to have the brutal, mechanistic clarity necessary to prevent inadvertent modelling of teacher style by Junior Leaders.

Sequential Leader Skills Teaching Model (SLSTM: Newman)

The idea behind this model is that the class will be formed into teams and presented with a series of sessions during which the aim and enabling objectives will be explained, and then within the microtask phase the

skill will be operated initially as a team-effort, and then analysed. This will be followed by a macrotask phase, toward the end of which would see the skill being operated by a nominated individual, leading the team to resolve a problem during the action-phase; this will also be analysed by both team and instructor.

Step 1

Aim: A statement of the specific leader skill to be practised.

Step 2

Enabling Objectives: the simple teaching points which together achieve the aim.

Step 3

Microtask: A small, illustrative learning task which teaches the aim and associated enabling objectives through practice. It can be a physically-reduced version of the later macrotask). The microtask is always followed by feedback as per Step 5.

Step 4

Macrotask: A longer, practical task which confirms the aim and enabling objectives via a full-scale, real-time exercise. The problem-script is shared by the team who together practise the skills aim and enabling objectives, but after sufficient development, a leader may be nominated to control the action of the team. The macrotask feedback follows as per step 5.

Step 5

Feedback: designed specifically around the stated aim, and enabling objectives, must be an objective feedback/debrief proforma applicable to both steps 3, and 4.

The original idea was a development of the Kolb and Fry (1975) experiential learning model, but in effect beginning at stage (3) "formation of abstract concepts and generalisations" by detailing the skill or skills to be learned. de Bono's (1978) artificial, tool-creating approach for teaching thinking is the closest to the SLSTM, in other words:

1   Deliberately create the tools/thinking operations,

2   Practice upon a series of "short problems", then

3   Use the tools on real-life situations.

de Bono's Tool-Creating Model (1978).
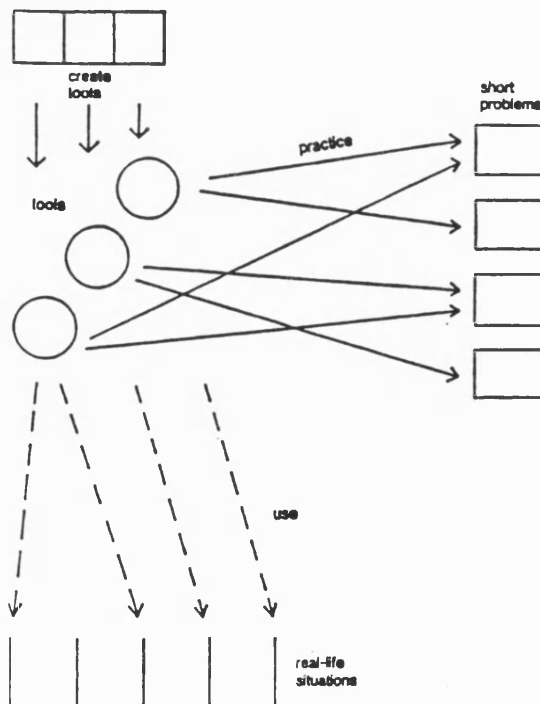
Peter suggested that I organise a three-day, in-service

training event, under the aegis of AES HQ UKLF, as part of

his INSET programme, upon the theme of leader skills.

The theme of the in-service course was stated to be:

"Leadership as a skilled performance" with a particular

interest in making better use of the group's work in

achieving tasks through:

a) Defining the necessary process skills involved. I did

not want to impose upon the working syndicates any of my

own ideas about essential process and skills. This INSET

was going to be an opportunity for me to learn from their

insights as well.

b) Deliberately designing practice situations for a). The

business of design, especially conscious design as opposed

to the traditional "wouldn't it be a good idea if we made

them do this?.." Even Binsted (1980) ends up describing

the qualities or ingredients of a good training event but,

like an academic art-critic, seems to get no closer toward

a technology of design. If we were able to define our

skills or processes and then design our practice micro and

macrotasks this would be a major step forward.

c) Deliberately concentrating feedback upon these skills

with the objective of making the implicit more explicit.

Feedback is an essential to identifying and modifying

skills. Unfortunately the logistics of training mean that

it is difficult to provide Directing Staff (DS) who have

been trained in the same system as the students. In order

to achieve a reasonably high DS:students ratio I have

often had to "borrow" inexperienced staff. And yet an

exercise of skills initially needs an authority figure,

who pedantically runs through a taxonomy of feedback

criteria; which in the case of his being untrained, must

be very simple to operate, confirming the processes until

later on when DS can be appointed from within the teams to

carry out the feedback for themselves. McLeish, Matheson

& Park (1973) suggest that there is probably more

learning value in observation by a learning-group member

than in active participation. The creation of simple,

unambiguous feedback proforma is a major step toward a

technology of skills training design, as well as a means

of the students consciously internalising the learning

criteria. I had myself experimented with different types

of feedback proforma, always on the basis of simplicity:

thematic, cyclical, sequential, process and variations

upon Kelly's (1955) repertory grid. It had been my

experience that as far as teaching skills were concerned,

the simple feedback proforma can be one of the "keys to

the kingdom", a representative mental map (Gould & White,

1974) of the designer's values and essential processes.

The programme sent to practitioner-students for the 3 days

included the following detail:

> Course Aim: "To practice staff in practical aspects
> of leadership course design."
>
> Enabling Objectives:
>
> 1. To provide an overview of the current trends in

learning and behavioural theory which underpin much
of current leadership (development and training)
practice.

2. Identify processes usefully involved in practical
task leadership.

3. Identify tasks appropriate to given geographical
locations.

4. Produce an effective assessment procedure, for
individual groups and tasks.

5. Produce a microtask to illustrate the
essential skill/learning process.

6. Demonstrate via a macrotask the application of the
identified skill/learning components.

There were thirteen students nominated to attend: six
serving RAEC officers, six ex-officers employed as MoD
lecturers, and one Lieutenant-Commander, Royal Navy
Instructional branch. All were divided into four working
syndicates, provided with a reporting timetable for
achieving these objectives, a supply of "typical"
equipment to develop a micro/macrotask repertoire, a map
of the exercise area plus a timetable of vehicle
availability for a reconnaissance on foot; and a warning
that on the morning of day three of the exercise, four
teams of Junior Leaders would rotate through the
syndicates "sampling" (and unknown to the syndicates,
rating and commenting too, on) the contents of their
version of the teaching model (SLSTM: Newman).

A simplistic action model was suggested to syndicates to enable them to design learning situations of five phases, involving a cycle of leader action:

1   Task presented (to leader).

2   Task analysed (by leader).

3   Solution presented to team (by leader).

4   Task completed by combined team (Action).

5   Analysis using debrief proforma covering phases 1-4 (by observer).

After a course administration session on day one, I gave a presentation providing an historical overview of leadership theory, leadership training in other armed forces around the world, and the dichotomy between skill and style-acquisition of leadership. I then handed over to Peter Lewis to detail and illustrate the course objectives. Peter had decided to explain the micro and macrotask concept with a physical demonstration; he chose to use a variation on the three-bottle problem (de Bono, 1968).

Peter explained the 5 steps involved in operating the SLST Model (aim, enabling objectives, micro/macrotasks, and feedback) and announced that he was going to demonstrate with an appropriate example. He placed three cotton-reels in a symmetrical, triangular formation, about a foot apart on a table in front of us, laid down three twelve-inch rulers and then announced that the problem we had to solve was that of constructing a platform on top of

the cotton-reels. Unfortunately no syndicate-member had
read de Bono's (1968) "Five-day Course in Thinking", or
solved its "Three-Bottle Problem" (see diagram below).
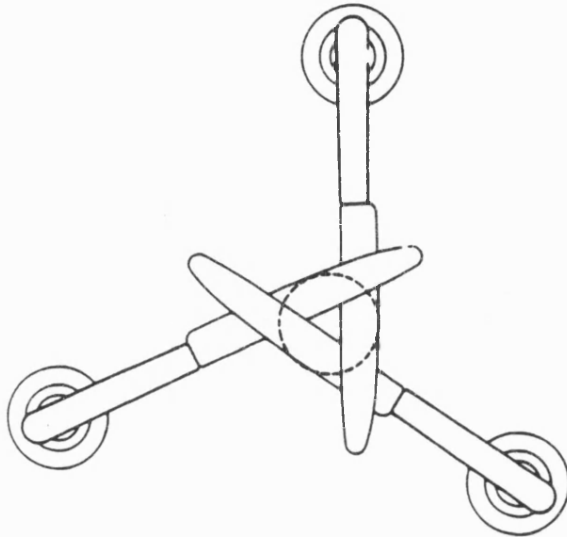
After some desultory fiddling with the rulers and a
suspicion that the problem was really just a rhetorical
demonstration, the syndicates gave up. In triumph, Peter
led us outside and there on the grass we saw that he had
duplicated the problem in oil-drums and wooden beams, but
with the addition of white mine-tape around the triangular
area bounded by the oil-drums, and placed a painted
ammunition-box in the centre of the triangle. Peter
explained that this was the macrotask stage, where the
problem we had to solve was that of retrieving the painted
ammunition-box within the triangular minefield, using
three wooden beams and the oil-drums, without touching the

surface of the minefield. Syndicates began to look

confused, but set-to with a will and, in a few minutes, a

cantilever arrangement of three beams mutually

overlapping, met at the centre of the mined triangular

area above the painted ammunition-box. Within moments an

intrepid syndicate-member had crawled along the beams and

retrieved the ammunition-box.

At this point, although slightly stunned, I realised

that something very interesting had just occurred.

Peter had made a classic misidentification of leader

skills: somehow, he had assumed that the skill of

recognising a cantilever situation, was a generalisable

leader skill with a universal application instead of

seeing the situation for what it really was: a <u>working</u>

<u>metaphor</u> for the idea of a skill identified, practised on

a small scale, then realised on a larger scale.

I realised that this confusion would not have occurred if

he had stuck to the model format and stated his aim and

enabling objectives first. Instead, Peter had

employed an experiential approach using the microtask as a

generalisable demonstration of the skill (a variation on

Kolb's "concrete experience") followed by confirmatory

feedback, which would identify the skill, followed by a

large-scale macrotask.

I brought everyone back indoors, privately explained

to Peter why the syndicates were puzzled, restated the

original Sequential Leader Skills Teaching Model system

and began to brief the syndicates on their priorities for

the coming two days. The task of the syndicates was to prepare to operationalise the system (SLSTM: Newman) in the knowledge that on day 3, they would have to deal with 40 Junior Leaders broken down into 4 ten-man teams, in four 75-minute sessions in the outdoors.

I suggested that they break down the 75 minutes into

minutes	action
15	State aim, enabling objectives, microtask carried out, followed by feedback.
45	macrotask
15	Final feedback.

The reporting deadlines for designed aims, enabling objectives, and linked feedback proforma were 2100 hrs (day one). A warning was given that syndicates would have to work on into the night if I considered that the material produced was flawed, and that early submission for my "editorial" review would be a good idea. In the event, after rejecting all the syndicates' work at least twice, I realised that my insistence upon conformity with the definitions given was creating a certain amount of bad feeling which would probably affect the next stage of micro and macrotask design. I decided to relax the definitions in the hope that what I saw as implicit difficulties encountered in the designing and operation of micro and macrotasks, would provide explicit hands-on learning experience for the syndicates and itself generate useful feedback.

The micro and macrotasks deadline was set at 2200hrs on
day two. This deadline was set purely in order to check
task formats, diagrams, safety aspects and get the task
scripts reproduced so that each syndicate member had a
complete collection of everyone's aims, objectives,
feedback proforma, micro and macrotasks for the morning of
the final day of the course. An ulterior motive had been
the possibility of making syndicates teach each other's
material. This would have been very useful but there was
not enough time to do this.

Results of Day Three.

In developing feedback, I had had several objectives in
mind: I wanted feedback to be simple and immediate. I
felt that if the syndicates were going to learn from their
mistakes, and transfer their learning into their own
repertoire, I had better be ready with some useful
analysis within 15 minutes of the end of the exercise. I
decided that the competitive motive could be usefully
exploited to underline good practice: so the basis of the
feedback would be to rate the relative performance of the
teams on various key aspects and not to attempt absolute
statistical values. I also felt that since the Junior
Leaders had worked as guinea-pigs for us, the least we
could do was to bring them into the final feedback session
on the exercise area, after the tasks had been dismantled
and loaded onto the vehicles.

I designed a simple A5-sized questionnaire. To

display the "fast feedback", I had five blackboards set up. The "consumers" of the training, the Juniors Leaders, would complete their questionnaires immediately after each 75-minute session and hand them back to us at the exercise HQ, at the centre of the exercise area for processing. I advised the Junior Leaders to hand in their questionnaires even if they couldn't answer individual items within the questionnaire.

The questionnaire would enable us to quickly analyse linkage and effectiveness between:

a) Aim, enabling objectives and the microtask.

b) Micro and macrotask.

c) Debriefing, the tasks, and the aim with its' enabling objectives.

- also the extent to which linkage was established in each session, and some idea of the effectiveness of these components from the viewpoint of the consumer.

EXERCISE BURNHAM BEECHES - STUDENT DEBRIEF.

1   The Aim: To establish whether students could remember the aim of the session. "What did the instructors try to teach you?"

Response criteria:

A = A specific mention of the stated aim.

B = Related to stated enabling objectives.

C = A + B.

D = Total number of responses.

E = Number of individuals who left this item blank.

Syndicates / % D:

	1		2		3		4	
A	2	7.4%	2	8.7%	6	17.6%	5	27.8%
B	7	25.9%	7	30.4%	3	8.8%	2	11.1%
C	9	33.3%	9	39.1%	9	26.4%	7	38.9%
D	27		23		34		18	
E	15		9		5		14	

Discussion:

Looking at the responses, only a maximum of 39.1% (syn.2) and minimum of 26.4% (syn.3), related to the aim of the session. Syndicates 1 & 4 had the largest number of blank returns (15/14) compared with syndicates 2 & 3, which suggests that at least 14 students out of a maximum of 40, could not even remember the aim of the session at its end.

This is an indictment of all syndicates. The exercise design quite clearly stated the operational model: that aims and enabling objectives should be clearly stated and reflected consistently in the microtasks and the macrotasks, and linked repetitively in the feedback. There were, after all, six exposure opportunities for the aims and enabling objectives:

1   Statement of aim and enabling objectives before the microtask.

2   Use during microtask.

3   Feedback after the microtask.

4   Use during the macrotask.

5   Feedback after the macrotask.

6   Final debrief on the 75-minute session.

2   The Microtask:

2.1 "What points were learnt from this small task?"
(in other words was there a clear link between the
stated aim and enabling objectives, and the
illustrative microtask?)

Response criteria:

A = Points learnt from the microtask which related to
    the aim or enabling objectives.

B = Total number of responses.

C = Number of individuals who left this item blank.

Syndicates / % B

	1		2		3		4	
A	6	46.1%	7	43.8%	8	61.5%	16	69.6%
B	13		16		13		23	
C	19		16		19		9	

Discussion:

There seems to be good linking of aims and objectives to
the microtask, though a closer examination of blank
returns (C) suggests that it was only syndicate 4 that
managed to establish a relatively unambiguous link.

2.2 "How effective was the microtask at making its'
points?" This was measured upon a strength scale of:
1 = weak, 5 = very good.

i   <u>Syndicates / Mean responses.</u>

     1 = 2.97 2 = 4.23 3 = 3.84 4 = 4.31

ii   Average mean for all syndicates = 3.84

iii Standard Deviation of syndicates' mean response
     values about the average mean for all syndicates
     = 0.61

iv   Syndicates' variation about the average mean
     (ii), in terms of (iii), converted to T-scores
     with an artificial average mean (ii) of 50%, and
     SD value of 10 %.

     1. 35.7% 2. 56.4% 3. 50%   4. 57.7%

Discussion:

This was really a measure of the success of the microtask
design in acting as an illustration of the aims and
enabling objectives in the eyes of the Junior Leaders.
It is interesting to note that syndicate 4 on the previous
measure (2.1) managed the highest proportion of points
learnt from the microtask, with an associated smallest
number of blank returns. This links with the success of
their microtask in a mean response of 4.31, a T-score of
57.7% (iv, above).

    Syndicate 2 also achieved a relatively high
effectiveness mean of 4.23 and a T-score of 56.4%,
relating well to the response to item 1 ("What did the

instructors try to teach you?") Superficially, it would seem that syndicate 2 taught their aim with more success than practically all other syndicates, their microtask was good at making points per se, but not apparently points which linked clearly to <u>both</u> the aim and the enabling objectives (item 2.1 shows syndicate 2's microtask as the weakest in linking the aim and enabling objectives). An examination of syndicate 2's aims and enabling objectives, shows us why:

Syndicate 2.

AIM: To practise leadership skills in the completion of a
     set task.

ENABLING OBJECTIVES:

     To practise planning.

     To practise the preparation and giving of orders.

     To bring out the importance of forethought and -

     To control the group whilst carrying out the task.

The aim is deceptively simple, covering a vast potential area within the phrase "leadership skills", and the apparently specific enabling objectives are a collection of generalised possibilities, each containing a vast field of skills and sub-skills. Thus it was relatively easy for the microtask to make its' points since its' points were so general within the context of leadership!

3   The Macrotask:

3.1 To what extent did the macrotask make the same
points as the microtask? This was measured upon a
strength scale of : 1 = not at all, 5 = the same
points.

i   <u>Syndicates / mean responses.</u>

     1 = 3.33 2 = 3.76 3 = 2.81 4 = 4.31

ii   Average mean for all syndicates = 3.55

iii Standard Deviation of syndicates' mean response

     values about the average mean for all syndicate

     = 0.64

iv   Syndicates' variation about the average mean

     (ii), in terms of (iii), converted to T-scores

     with an artificial average mean (ii) of 50%, and

     SD value of 10%.

     1. 46.6% 2. 53.3% 3. 38.4% 4. 61.9%

3.2 "How effective was the macrotask in helping you
to learn? This was measured upon a strength scale
of: 1= Not effective, didn't learn much, 5 =
effective, learnt quite a lot.

i   <u>Syndicate / mean response.</u>

     1 = 4.0   2 = 3.72 3 = 3.93 4 = 4.06

ii   Average mean for all syndicates = 3.93

iii Standard Deviation of syndicates' mean response

     values about the average mean for all syndicate

     = 0.15

iv   Syndicates' variation about the average mean

(ii), in terms of (iii), converted to T-scores

with an artificial mean (ii) of 50%, and SD

value of 10%.

1. 54.6%   2. 36%   3. 50%   4. 58.7%

Discussion:

The points made about syndicate 2's all-embracing

vagueness with reference to item 2.2 apply here as well.

Syndicate 4 achieved what seems to be a qualitative

superiority over the other three syndicates in achieving

a 61.9% T-score for item 3.1, linking the microtask to the

macrotask.

However, an examination of syndicate 4's microtask

and macrotask script (Annex B.22-27) shows that both tasks

were largely based upon the same physical obstacle problem

of:

"how does your team cross a four-span gap with three

supports, a rope and only two planks?"

A problem which was varied half-way through by the

collapse of one of the supports, enforcing a re-appraisal

of the original plan. Clearly, syndicate 4 had been a

little cute, but upon re-appraisal of the video of their

session, I felt that their linking had been successful

because they alone among the syndicates had established

the clearest explicit micro and macrotask link to their

stated aim:

"To involve a chosen leader in adapting to a changing

situation in the execution of a given task."

This success in communication was reflected to some extent
in item 3.2, where syndicate 4 had the highest mean
response value for their macrotask's effectiveness as a
source of learning, with a t-score of 58.7%.
Students marked <u>all</u> syndicates relatively highly, with an
average response mean for all syndicates of 3.93, with a
small SD of 0.15.

4   The debrief: How constructive were the instructors'
     remarks about the team's performance? This was
     measured upon a strength scale of:
     1 = not at all, 5 = all comments were to the point.
     i   Syndicate / mean response.
          1 = 4.31   2 = 4.43   3 = 4.5   4 = 4.34
     ii   Average mean for all syndicates = 4.4
     iii Standard Deviation of syndicates' mean response
          values about the average mean for all syndicates
          = 0.1
     iv   Syndicates' variation about the average mean
          (ii), in terms of (iii), converted to T-scores
          with an artificial mean (ii) of 50%, and an SD
          value of 10%.
          1. 42%   2. 54%   3. 61%   4. 45%

Discussion:

Overall it looks as though the students' scoring of
syndicates' feedback upon the team's performance was very
high, the collective mean was 4.39 out of a maximum
possible of 5, and a minimum of 1. This impression may be

the product of having a minimum of 3 instructors in a
syndicate dealing with 10 Junior Leaders at a time, and
may be a reflection of the attention and pressure each
Junior Leader felt he received, even if in the case of
syndicate 3 - the feedback although constructive did not
relate strongly to the stated aim (item 1), although it
did relate strongly to the enabling objectives; enabling
objectives which apparently related well to the microtask,
but not to the macrotask.

An examination of syndicate 3's script (B.26) and feedback
proforma (B.30), shows how this microtask is really a
rather bald opportunity for the feedback criteria and
enabling objectives to be operationalised without the
distraction of too much physical activity, the statement
of which is contained within the initial microtask script:
but that the syndicate's proximity to a water obstacle
tempts them into making the construction of a raft the
dynamic for the macrotask, and steers the students into
processes unrelated to the microtask. I suspect that the
reason for this distraction was the presence within
syndicate 3 of a forceful Royal Navy Lieutenant-Commander
(Instructional Branch) from HMS Royal Arthur, the Petty
Officer Leadership School at Corsham. The regime at Royal
Arthur consists of Adair's (1973) Action-Centred
Leadership, plus assault-courses, team runs, hill-walking,
and dragging obsolete militaria such as armoured cars,
Land-Rovers, aircraft-engines or barrels of concrete over

physical obstacles, using muscle, rope and tackle.

5   Comment: what helpful criticism would you make

regarding the syndicate's work with you?

Syndicate 1.

Good (2), slightly boring - too long-winded (1),

instructors were not very helpful (7), very good, but

too much criticism (1) - 21 blank.

Syndicate 2.

Reduce search area (1), They made you feel

uncomfortable (1), good criticism (2), explained

mistakes, but not positive or in great detail (4) -

24 blank.

Syndicate 3.

Quite good DS debrief (3), more planning needed (1),

he was quite good - though I didn't know what he was

on about (1) - 27 blank.

Syndicate 4.

Teaching method too authoritarian (4), instructors

didn't explain a lot to us (2), not relaxed, but not

too strict (2), needed more time (1) - 23 blank.

Discussion:

Very few Junior Leaders answered this final item at the

bottom of the page, and although the time-pressure which

they were under may have made what was received rather

impressionistic, some of it is revealing. In syndicate 1,

seven students commented to the general effect that the

instructors were not very helpful. A review of the micro

and macrotask scripts shows that success in both micro and macrotasks was dependent upon several facilitative skills: tying lashings and square knots, and the use of Karabiners (a metal link for joining two ropes, with spring-loaded gate) as pulleys. The microtask script had ambiguous distracting lateral thinking or semantic "riddle" overtones which appeared to suggest that either a) none of the equipment was necessary; or b), all of it had to be used in some novel, yet specific way. In the event, this ambiguity for the students meant that they initially looked for some kind of physical cue or direction (Maier, 1931) from the syndicate, as to the correct solution. The syndicate members realised that the students were looking for cues outside the script and became rather cold and distant in order to channel the teams' attention back to the actual problem.

In the case of syndicate 2, there was a fairly good link between the aim, enabling objectives, and the microtask. Central to the microtask was the creation of a scale model of a minefield and the relative positions of safe areas within it, the modelling of optional routes across the minefield with scaled pieces of card to represent actual planks, and the sequence of plank-combinations necessary. As a microtask to illustrate the use of models for problem-solving, model-criteria, and use of models to explain a course of action, it was first-class and clearly impressed the Junior Leaders. However the feedback proforma operated criteria which required

several lessons in specific operations, processes, and
values; and I think that this explains the relative
weakness in syndicate 2's macrotask making the same points
as the microtask (item 3.1). Essentially the microtask
was a fun experiment and the macrotask turned out to be a
test based upon the designed feedback proforma which had
little to do with the microtask. After the first team of
Junior Leaders had gone through, the syndicate realised
what they had done, but felt that it was too late to
change the macrotask for a completely new one.
Syndicate 4's teaching method was characterised as too
authoritarian, this was largely due to the pressure of
time, the microtask location being too distant from the
macrotask, and the unnecessary complexity of the macrotask
scenario.

Conclusions:

Firstly, the character of the design relationship between
the microtask and the macrotask may have been determined
by Peter Lewis's initial mistake of scale and skills. In
other words the physical skills within the problem were
seen as the "message" and not purely as the medium of
developing and practising the leader skills. Similarly
it confirmed my own observations: that students tend to
learn the "problem" and to forget the processes that they
are designed to illustrate and develop.
On the other hand, perhaps it revealed aspects of the real
problem of problem-development being based upon "tricks"

or specialist skills and not upon transferable process
skills. It seems as though the medium of learning can
very easily become its own message. This "mistake" led to
some interesting model-based work; in other words, the use
of models to represent problems and to work through the
solutions available. This use of models was explicitly
stated and operated only in syndicate 3's microtask,
although it was an unstated objective in syndicates 2 & 4.

The ambiguity of the syndicates' work is reflected in
the number of Junior Leaders who gave confident answers
which were, however, unrelated to the stated aims and
enabling objectives of the syndicates. Clearly things
were being taught which the syndicates had not stated as
being part of their design.
Syndicates enjoyed themselves testing the Junior Leaders,
but few syndicates specifically taught much.

The macrotasks generally showed a concentration upon
physical action resolving problems after a largely
implicit process of problem-solving. I believe that this
has its source in
a) The traditional RCB, selection-basis of the leadership
tasks, b) associated leadership qualities-based criteria
of the syndicate-members' own repertoire, and c) the
belief (implicit in a qualities-approach) in a "hands-off"
experimental attitude where problem-design is often based
upon the knowledge of a particular physical trick or
role-based, operational scenarios.

Finally, I came to several conclusions which would
determine my next step:

1   It was unfair to expect a microtask to be immediately
followed by a macrotask which would operationalise the
leader skill; unfair because a threshold of learning was
necessary to establish a foundation of basic information-
handling skills before you could usefully do anything
else. It was this lack of articulated simple processes or
defined problem-solving system that had led to teams
producing experimental micro/macrotasks based upon
cantilevers, and techniques such as lashing knots. Not one
of the syndicates had developed this as the theme of their
session - it had been mentioned but no primary method had
been established. The teams had tried to cross the
equivalent of an assault-course before they could walk.

2   Accordingly, I decided that the learning model needed
some re-thinking in terms of building an initial
foundation of basic process skills. This foundation needed
a sequence of microtasks following each other,
cumulatively building up a threshold of skills before the
macrotasks were approached.

3   Another lesson from the syndicates was simplicity:
their ambition had led to a lot of learning which was not
part of their stated design. This meant that microtasks
had to be limited, and specifically used, only to exercise
the stage of process-skill in question. At the end of the
fast feedback session, I turned one of the blackboards

around and asked the syndicates to consider the by-now

acknowledged flaws in their initial design: the basic

consideration of suitable, operational aims and enabling

objectives; and in the light of their experience on this

exercise, to suggest some more practical "teachable"

alternatives. The syndicates' feedback led to a useful

list of skills, some with greater implications then

others:

     1/8   Problem-definition (evaluation/discrimination).

     2/8   Solution-framing (decision).

     3/8   Task-structuring (organising the plan).

     4/8   Task-presenting.

     5/8   Performance analysis - use of feedback systems.

     6/8   Self-presentation - as a credible information

           source.

     7/8   Crisis-recognition and management.

     8/8   Team control and coordination.

Reviewing this list and in view of the subsequent contacts

after the exercise, it looked as though the principle of

skill-teaching and its difficulties had been recognised.

It then occurred to me that it would be useful to be

able to look at a task involving a group, led by an

appointed leader in terms of a potential skills-profile:

in other words, if we drew up a cyclical skills-list for a

leader from the point of the problem of the task being

known, right through to a feedback session after a task

action has been carried out: we could analyse tasks in

terms of a potential signature or profile of skills

deployed above a subsistence-level. Such a Profile
Analysis of Leader Skills (PALS) could be another means of
introducing a skills approach into leader development,
purely in terms of the criteria used within the profile.

4   Reviewing other design factors after the exercise and
direct feedback from the Junior Leaders, it seemed that
the idea of learning teams was useful in the sense that it
offered advantages through group dynamics, in terms of
task and social motivations, feedback in overt peer
performance as well as intergroup competition. In other
words, the use of the group allows the group to build a
kind of bridging culture: "This ability and readiness to
learn from your companions results in a community having
shared skills and knowledge, shared ways of doing things -
in short, a culture." (Attenborough, 1979)

5   A significant aspect of the exercise had been the use
of physical modelling of the problem. Clearly, a key
skill to teach would be the use of models to a) represent
the problem, b) model alternative courses of action, and
c) to explain the plan.

Modelling, or the reduction of problem factors to a
working abstract structure, underlay the micro/macrotask
idea and implicit within that was the idea that this
foundation of process skills learning needed to be
internalised in a plastic sense, through a medium that
complemented the cognitive's (Bloom, 1956) specific
learning objectives and feedback, with both the affective

(group dynamics of learning teams - relative success or failure) and the almost piagetian (1958) sensory-motor: through physical actions realising the designed operationalised skills.

I began to realise that this explicit modelling of problems in order to operate problem-solving processes was itself a metaphor for a modified teaching/learning method: the success of a model lies in its functional detail. The success of a skills-teaching system, lies in the students' ability to explicitly operate its skills independently of the instructor. If we take Bruner's Dantean analogy (1966), relating the poor workman's blame for his tools, and many students' dislike for the major tools of thought, then perhaps explicitly modelling the tools of skill will make them more "lovable".

6   Problem-solving routines would be a useful foundation for this learning, but problem-presenting skills were also necessary, to exploit the group dynamics' aspects of the learning and to provide motivation for "getting it right" in front of a live audience.

Chapter Three: The Beginnings of Design.

In this chapter I describe the problems of developing what
is almost a counter-culture of problem-solving skills, and
explain the reasons for the approach taking the direction
of developing systematic problem-solving skills through
the context of microtask games, and the vehicle of task-
oriented learning groups.

The rationalisation described at the end of the previous
chapter did not occur overnight. I found the latent drive
to improve my techniques and understanding of the
constraints continued after the "carrot" of the M.Ed had
been consumed, and the role-enhancement of running the
Burnham Beeches INSET had become history.
I began to think about continuing the action-line of
research and operationalising the lessons learnt within my
experimental Team Leader programme of Junior Leader
Leadership training at Colerne.
Several of the Burnham Beeches' INSET syndicate
"graduates" came out to see the macrotask and feedback
exercise in the Forest of Dean and later on, to observe
the developing microtask work in the classroom.

By the beginning of February 1984, I had produced a
sequence of eleven experimental microtasks to cumulatively
operationalise fourteen learning objectives over a
teaching programme of twelve double periods in a fourteen-
week term; this was consolidated by a 48-hour macrotask
exercise within the Forest of Dean.

Interlude (2).

I always remember a particular "practical" learning

situation that occurred on a rather humourless survival-

course in 1978. The instructor set the scene for us: "You

are alone and being hunted by the enemy, you have managed

to lose your pursuers through running along the beds of

streams and managed to buy a little time before they bring

in the helicopters and more dog teams to widen the search.

You have not eaten for 48 hours. Doubling along a

hedgerow, you see a sheep trapped by its fleece in the

hedge. You must eat. The population is hostile. You

must avoid farmhouses, shops and roads and keep moving

westwards. What do you do?"

The answer was: kill and butcher the sheep. There was

however, very little time available to carry this out

properly according to the system taught on the course. The

solution was to decide upon a series of priorities:

kidneys, liver, heart and, if there was time, the stomuch

-lining and contents of pre-digested grass.

We had to know what it was we wanted, cut it out, and

run. Most of the sheep's body was irrelevent to our needs

and must therefore, be abandoned.

A year later, I was on teaching practice at a large boys'

comprehensive in South London when the point of that

lesson came back. As an English teacher, it seemed to me

that the whole-school "Language Across the Curriculum"

approach (Marland, 1977) was the key to developing

learning and teaching priorities at this level. If the

primary skills, formats, and standards of organising,

presenting and using the information presented within

curricula were developed, the student could move faster,

look ahead, have realistic objectives and recognise when

they had not been achieved. If you had the right tools,

you could do the job. What I saw was the conventional

process of trying to have adolescents swallow the

curriculum whole, and like that sheep, it was proving just

too much for most pupils to carry away with them.

The Reasons Why.

> "Theirs not to reason why,
>
> Theirs but to do and die:
>
> Into the valley of Death
>
> Rode the six hundred."
>
> -Tennyson, 1854.

Upon appointment to the Junior Leaders' Regiment, Royal

Corps of Transport, I had understood the importance of

students learning to deal with information. I had

developed an initial integrated humanities approach

explaining the need to structure information in everyday

life and suggesting some useful formats recognisable

within the media. I linked the effective use of

information to leadership and successful teams. Later on,

I developed some team-tasks exercising the information

formats: based largely upon communication skills and the

need for unambiguous presentations to co-ordinate a team's

actions. It was fun to teach but still two-dimensional.

I found Illich's deschooling (1973) argument had some

application to this problem of teaching students to deal

with information, in spite of its being firmly rooted

within a third-world context:

"many students, especially those who are poor

intuitively know what the schools have to offer them.

They school them to confuse process with substance.

Once these become blurred, a new logic is assumed:

the more treatment there is, the better are the

results, or escalation leads to success."

It is sad to reflect upon the basic message of the

Handy and Constable/McCormick (1987) reports upon

management development within the UK, that the answer (by

implication), to our difficulties in competing with our

foreign economic rivals, is to give more managers much

more "treatment".

What happens when students habitually confuse process

(the process of education) with content? John Holt's

anecdotes (1965) provide a useful clue:

"there was a lot of room for improvement in the

rather loose classes I was running last fall, but the

children were doing some real thinking and learning,

and were gaining confidence in their own powers. From

a blind producer Ben was on his way to being a very

solid and imaginative thinker; now he has fallen back into recipe-following production strategy of the worst kind... For all our talk and good intention, there is much more stick than carrot in school, and whilst this remains so, children are going to adopt a strategy aimed above all else at staying out of trouble. How can we foster a joyous, alert, whole-hearted participation in life, if we build all our schooling around the holiness of getting the right answers? "

Robert Pirsig's hero, Phaedrus (1976), comments similarly in his approach to the teaching of rhetoric:

"As a result of his experiments he concluded that imitation was a real evil that had to be broken.. This imitation seemed to be an external compulsion. Little children didn't have it. It seemed to come later on, possibly as a result of school itself.. Schools teach you to imitate. If you don't imitate what the teacher wants you get a bad grade.. You were supposed to imitate the teacher in such a way as to convince the teacher you were not imitating.."

What is the answer to this tendency towards a producer - strategy with its subsistence-level of commitment, its acknowledgement of dependency upon the teacher, a teacher whose flawed teaching method can lead to modelling as a substitute for understanding , "a retreat from skill acquisition to style acquisition" (Musgrove & Taylor, 1969), like Carl Roger's (1967) example of the less

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competent counsellor who "tends to induce conformity to
himself, to have clients who model themselves after him".

How Can We Develop "Thinker" As Opposed To "Producer" Skills?

The problem of attaining knowledge does not need to be
based upon a hierarchical structure. According to
Bernstein (1965) and Michael Young and associates (1971),
it is possible to acquire knowledge through learning to
solve problems; learning how to do something, rather than
storing information, is the basis of all types of
learning. This challenge to the hierarchical nature of
knowledge brings into question the political attitudes
implied in treating some data and concepts as superior to
others. Our progress in education involves increased
knowledge about smaller areas, but this specialization
does not help us to solve the problems encountered in
everyday life. Deference to the specialist creates a sense
of inferiority and dependence in children without the
tools to judge the soundness of the specialist's argument;
creating a preference for role or class-enhancing myth
(Barthes, 1973; Mannheim, 1953) as a substitute for
judgement or action.

> "Myths are internal organising frameworks for
> information. Such frameworks may increase the
> usefulness of available information by putting it
> together into a coherent structure that it would not

otherwise have. But the arrangement of information contained in a myth may also be considerably worse than the best arrangement of available information."

(de Bono, 1969)

We can smile at the Cargo Cults of New Guinea, but how many equivalent redemptive packages (Berger, Berger & Kellner, 1974) infest our education culture? Through myths people build a defensive working-repertoire based upon value-based responses developed in a partial vacuum, and not a repertoire of tools. Under these circumstances it's easy to interpret events in terms of ideology as opposed to logistics.

It is not a question of pumping or processing volumes of knowledge or even lots of generalised knowledge in order to become "well-rounded" (whatever that means!) but of using process-based skills consistently upon discrete, useful (in the students' terms) material, and in so doing developing a transferable skill. If we build skilled purposiveness into our education we can learn to process information according to an open, criterion-based model.

In order to solve this problem of a) producer-strategy, b) subsistence levels of motivation, c) pupil-dependency, and d) social style-acquisition we need to look at problem-solving, learning and skills.

If we look at this problem in terms of an analogy, de Bono's (1969) jelly-model example of how the mind (in perception) provides a means whereby incoming information

organises itself, and forms patterns. Once a pattern has
been formed then "the mind no longer has to analyse or
sort information."

de Bono uses a tray of jelly as a model of a memory-
surface. A bowl of ink is heated up. When a spoonful of
this hot ink is placed on the gelatine surface, it
dissolves some of the gelatine. Later, when the dissolved
ink/gelatine mixture is cool, we can pour it off; leaving
a shallow depression on the surface of the gelatine.
Subsequent spoonfuls of hot ink will erode a channel into
the gelatine surface.
The point behind this analogy is that the first
information to arrive altered the surface. This altered
surface affected the way in which new information is
received. The behaviour of the memory-surface shows how
old patterns come to interact with new ones, it shows that
the older patterns can actually determine how the new ones
are received. This can mean that new information may only
be received in terms of the old pattern. In order to
break out of this deterministic processing-trap, we need
to consciously adopt new patterns, new ways of thinking.
We need to define, develop, practice and modify them.

Context: The Problem with Problem-Solving.
If we choose the label "problem-solving" to develop
perception, or thinking, then which kind of problem-
solving do you use as your material? What is going to be
the context of this problem-solving? The "Education for

Capability" campaign (1984) sponsored by the Royal Society
of Arts, provided an interesting overview of the attempt
to deal with the apparently cultural dichotomy between
education and training:

> "The idea of the educated person is that of a
> scholarly individual who has been neither educated
> nor trained to exercise useful skills; who is able to
> understand but not to act. Young people in secondary
> or higher education increasingly specialise.. they
> acquire knowledge of particular subjects, but are not
> equipped to use knowledge in ways which are relevant
> to the world outside the education system."

The campaign highlighted the need of pupils not just to
"know" but also to "do", pointing out that the distinction
between education and training is spurious and unhelpful
in that it down-grades the acquisition of skills.
Illich's deschooling argument unambiguously suggests the
futility of skills-learning within schools (1973) and
interestingly, misuses the anecdote of Karl Marx's
resistance to a passage in the Gotha programme, for a
union of Germany without Austria under a constitutional
Prussian monarchy "which one hundred years ago - wanted to
outlaw child labour. According to Illich, Marx opposed
the proposal in the interest of the education of the
young, which could only happen at work." (What Marx
actually said was that: "the early combination of
productive labour with education is one of the most

powerful means for the transformation of present society.") (Fernbach, 1974)

The irony is that often under the banner of "education for capability" the same old hidden agenda have been practised. I was particularly struck by the examples given in a BBC Radio 4 (1987) broadcast about the scheme. The old Forsterian "well-rounded" pupil appeared again ("well-rounded" in the complacent expectation that the rate of technological advance will inevitably make any specialised learning obsolete); and therefore the more generalised the learning, the better - which seems to be going to the extreme of anti-specialism and offering only insights and by implication, teacher's values.
Another successful scheme adopted a Deweyian project approach (Dewey, 1956) in which integrated learning is derived from subject matter arising out of primitive or basic social activities - weaving, cooking, or any kind of construction: a form of education Dewey characterised as the "intelligently directed development of ordinary experience." It seems as though some pupils are being offered learning without a direct context, whilst others are offered contexts without direct learning.

The difficulty of problem-solving contexts is dealt with in different ways. The traditional approach, styling itself as "problem-solving", is usually directly rooted within a particular context, it ignores the topic of process-learning completely and deals almost purely with a semi-covert or overt agenda involving either the

introduction of materials technology (Lewin, 1984;
Balaam, 1984), the socialisation of individuals via
involvement in group processes (Stansfield, 1986; Hopkins,
1985) or the politicisation of students via involvement in
role-playing "planning exercises" based upon ecological
and social services issues (Bishop & Russell, 1984). It
seems as though this area of contexts is the playground of
groups using the topic as a means of continuing to
transmit attitudes and values, and not skills. Thus we
have scientists and technologists who want to sponsor and
develop potential student interest via hands-on
involvement in their field without putting off generations
of potential scientists with the involved disciplines of
formal training. And we have teachers who use role-
playing "problem-solving" games and materials to transfer
ideas about one-world ecology, North/South economic
imbalances, and inner-city resource problems, which in
turn often imply an involved series of political
priorities.

On the other extreme, the practitioners of process
regardless of context are typified by de Bono, and Jackson
(1975), who preach the primacy of process without use of
any particular context to develop the problem-solving
processes. They seem to be saying: these processes are
universal and do not require any special context within
which to develop. Reuven Feuerstein (Sharon; 1983,1984)
is a major exception to de Bono and Jackson in his

acknowledgement and use of the family as the source of
primary socialization (Berger & Luckmann, 1971) in the
process of developing, like Otto Selz, in pre-war Germany
(Lewis, 1981) children with learning difficulties.
Clearly the contexts in which the term "problem-solving"
is deployed are a product of what the instructor sees as
"problems", a problems context which has not been chosen
purely as the best means of carrying out effective skills
learning.

To some extent, the experiential "learning through
experience" aspects of some problem-solving activities
within the YOP/YTS (MSC, 1981) offer at least some
opportunities for learning which might be applicable to a
variety of social occasions. However, the emphasis upon
the "feeling" aspects tends to make it another form of
experimental social dramaturgy (Goffman, 1969), an art
form in itself and thus, by definition, divorced from
reality. In theory, the emphasis upon experience as the
source of the derived skills-learning, seems to work well,
but as de Bono (1978) observes:

> "in practice, it does not. It is easy enough to
> provide thinking situations. It is also easy enough
> to suppose that because the pupil is indeed **thinking**
> in such situations he must also be abstracting some
> general principles. What tends to happen is that the
> interest and the momentum of the content preclude any
> attention being paid to the thinking process itself."

de Bono's point seems also to relate in my view to the

area of "brainstorming" (Rawlinson, 1981; Adams, 1979)
where the suspension of defeatism and the inflation of
contagious enthusiasm can create an exciting climate of
possibilities. The problem remains that it is rare that
individuals can operate the technique alone and it is rare
that individuals give up their autonomy outside the
experimental classroom for long, without a specialist
facilitator. Unlike synectics (Gordon, 1961)
brainstorming is a form of problem-solving without an
implicit, functional social context. It is, however,
useful as a behavioural set-piece demonstrating synergy
and the potential of the group as a pool of individuals to
compete positively and a covert means (a kind of rather
public Rorschach ink-blot test) of eliciting myths held
within the group.

The prevailing use of problem-solving seems to be as a
form of culture-carrier via context. The medium of
cultural transfer seems to be an end in itself. The
single, encouraging factor common to all these misdirected
efforts is the implied understanding shown by all involved
of the importance of using the learning group to enhance
learning.

In order to teach problem-solving which is transferable to
events and not just a class of events or a single context,
it is necessary to consider a model of the type of growth
that one hopes to achieve. Bruner begins his "Toward a

Theory of Instruction" (1960) by assuming that man is basically rational, and therefore "instruction" is "an effort to assist or shape growth." By intellectual growth, Bruner lists the following six characteristics:

1   Growth is characterised by increasing independence of response from the immediate nature of the stimulus.

2   Growth depends upon internalising events into a "storage system" that corresponds to the environment.

3   Intellectual growth involves an increasing capacity to say to oneself and others by means of words or symbols what one has done and what one will do.

4   Intellectual development depends upon a systematic and contingent interaction between a tutor and a learner.

5   Teaching is vastly facilitated by the medium of language which ends by being not only the medium for exchange but the instrument that the learner can then use himself in bringing order into the environment.

6   Intellectual development is marked by increasing capacity to deal with several alternatives simultaneously, to tend to several sequences during the same period of time and to allocate time and attention in a manner appropriate to these multiple demands.

Essentially, although I suspect Bruner does not realise it, this "growth" is synonymous with what Feuerstein characterises as the development of "mediated learning experiences" without which a systematic approach to

problem-solving cannot be sustained, a lack of which means
that children will not be able to transfer knowledge from
one context to another.

Interlude (3).

I was watching a repeat of the "Now Get Out of That" BBC
TV series in 1983 featuring as usual, two competing
groups: one British and one American. My motivation in
watching this programme was parasitic, as a problem-
designer myself, I was interested less in Ron Pickering's
homely voice-overs than in the situations set up for the
teams. However, as this series developed I began to notice
some interesting differences in the teams' problem-solving
approaches and the characteristic way the two groups dealt
with the pressures of the competition.

The American team of four (two men, two women) were
clearly task-oriented, they consciously avoided behaviours
which distracted them from the task. The British team
used the problems to develop their preferred roles. Their
main difficulty being that, having adopted their social
role-set, when a problem situation actually began most of
their efforts were directed toward the maintenance of
these roles at the expense of successfully achieving the
task. As the series of problems developed, they dropped
further behind, continuing to reassure each other that
somehow the maintenance of the group's solidarity even in
defeat was more important than resolving the problem of
why they were losing. This concentration upon maintaining

the social aspect of the group at the expense of the task,
seems to be a well-documented historic British
characteristic (Corelli Barnett, 1972; Newman 1987; Dixon,
1979 and Huntford, 1979). This "groupthink" tendency
(Janis, 1972) might serve to explain the attractiveness of
"experiential" methods as a means of developing group
solidarity.

The Learning Group

If the medium is to be the message, I had to consider the
means by which my problem-solving training was to be
transferred and a Brunerian (1960) growth developed.
As a student teacher, I had been impressed by Berger and
Luckmann's "The Social Construction of Reality" (1971),
dealing with a sociology of knowledge: in particular their
analysis of the Marxian concern that "human thought is
founded in human activity (labour, in the widest sense of
the word) and in the social relations brought about by
this activity." It occured to me that I ought to consider
developing a medium which operated as a social context for
problem-solving. I decided to develop the learning
groups idea implicit within the Burnham Beeches INSET
format.

The macrotask phase in the forest of Dean had already
successfully used the recipe of teams made up of
individuals, each of whom was fully-armed with
information-power, through being prepared to lead at least
one task. The full-scale macrotask phase used the team as

a resource - initially as a labour-source and later as a source of feedback, confirming and modifying their use of process to structure, present and control the planned activity.

I had to be pragmatic about developing change within the Army's terms. There was no point in attempting change which contained a culture overtly contradicting the status-quo within the Junior Leaders' Regiment or the way the peacetime Armed Forces conducted itself. I had already used teams within the macrotask phase, managing to reduce the exercise team size from seven students per DS, to five. From my observation of the Burnham Beeches INSET, it seemed that ten students in a learning team using skills was too large, I tried to use separate teams of five within the classroom on some of the early microtasks and still came up with a significant amount of what I styled subsistence-learning behaviours:

   Firstly the "tourist" (Binstead, Stuart & Long, 1980) behavior of students used to a "fire and forget" attitude of instructors or teachers, launching their instruction like a shell in the general direction of the target - the student. Consoling itself philosophically, upon its lack of accuracy by saying: "don't worry - it is <u>bound</u> to hit someone or something, sooner or later."

The second characteristic of these subsistence-learning behaviours was the prevalence of the "grey man" syndrome (Downey, 1982): the tendency to sink into the background,

to "switch off", to consciously withdraw - an aspect of
inmate life within a total institution which Goffman
(1961) would have categorized as part of "removal
activities".

The two, together, meant that students adopted a cynical
survival attitude toward training and learning. This
attitude was discernible in the imbalance of
student:instructor activity ratios. Although I never set
up any objective measures to quantify this imbalance, it
was evident to me, after observing other instructors
teaching, that this tourist attitude led to students
effectively modifying the instructors' teaching behaviours
so that he or she did most of the work within a session!
This activity ratio imbalance confirmed the traditional
student's role of passivity, and the traditional
dominance/submission relationship between staff and
inmates, a convenient vicious circle confirming the power
and roles of status-quo. The learning group had to be
large enough to have to develop a sense of identity, and
yet small enough to mean that subsistence-behaviours would
be clearly seen by participants to be defeating the
group's purpose.

Finally, the triad (3-man team) seemed to effectively
expose both the "grey man" and the "tourist", in fact
their body language allowed an instructor to scan the
classroom whilst the teams were chasing a deadline on a
task, and the contrasting lack of animation would give
them away!

My students were strongly drawn toward the idea implicit within the Regiment's training system: the end-product of all this rite of passage, which they passively endured, would be an individual who would be able to act appropriately in the new "leader" role; as a special kind of adult within both the military and, presumably, within the civilian adult world. This was the central dichotomy of the training situation, that having endured the training regime, some intrinsic unspecified metamorphosis would enable students to overcome the contradictions between a) the medium of training , b) their role as students during training and c) their perceived role as soldiers leading other soldiers. I felt very strongly that the medium of the work within the triads, during the microtasks, should consistently lead toward a reversal, if not an equalization in the activity inbalance between student and instructor; and thus mirror the marxian concern with thought being necessarily rooted within human activity and the social relations brought about by this activity (Berger & Luckmann, 1971). In other words I needed to create working groups to provide a context and a motive for the learning processes.

Fiedler's Contingency Model and Leader Effectiveness
A convenient vehicle for developing the working group and linking leadership behaviour to tasks was Fiedler's (1967, and 1972) contingency model of leadership effectiveness. The contingency model attempts to relate personal styles,

situational factors, leadership functions and roles.
Fiedler restricted his interest to task leaders who could
be clearly identified as occupying a leader role in an
organization or a small group. Fiedler's main instrument
for measuring leadership style, the least preferred co-
worker scale (LPC), assumed that a high LPC score was
characteristic of a friendly, accepting and permissive
leader, and a low score typical of aloof, demanding task-
oriented leaders.

My interest in Fiedler's theories lay mainly in his
definition of the favourability of a situation or
leadership context for a leader, as a determinant of the
ease with which the leader was able to control and direct
the behaviour of the members of his group. This depended
upon three critical sets of variables. The most important
being the leader-member relations, the situation being
favourable to the extent that the leader had the loyalty
and confidence of his group. The next most crucial being
the task structure, the more clearly structured the task,
the more favourable the situation. Thirdly, the greater
the power of the leader's position in terms of the
sanctions and rewards at his disposal, the more favourable
the leader's situation.

The preferred and bottom-line leadership behaviour within
the Forces is one based upon the low LPC score type - the
aloof, demanding task-oriented leader. It is interesting
to consider some informal, unsponsored research done at

RMAS before the Falklands War, at a time of controversy
over whether a degree should be a basic educational
requisite for becoming an officer, research which appeared
at the time to suggest a patronising correlation between
graduate officers and high LPC (Potter, 1982): the
corollary of which suggested that under combat conditions
the graduate officer would tend to have a reduced
capability due to his higher level of education, making
him more open to perceiving ambiguity and a tendency with
a higher LPC to consider the social aspects of the group -
perhaps seeing the preservation of his men as being more
significant than the task (say a Shackleton, as opposed to
a Captain Scott). In the event, perhaps due to the elite
unit background of the majority of graduates looked at in
terms of combat performance, the relatively high
graduates' LPC scores went hand-in-hand with high task-
orientation.

The difficulty lies in maintaining this role with
subordinates from different Corps, specialities and
greater experience within the team. It seemed to me that
Fiedler's contingency theory provided useful motivation
for developing useful problem-solving skills within a
task-oriented learning group, in that it could justify
its skills-basis as a means of ensuring that future leader
situations could be handled with greater confidence.
Since the military leader is appointed with all the
sanction of hierarchy and precedent, his clear
demonstration of problem-solving skills will help him

towards a) the group having confidence in him, supported
by b) his ability to structure the task clearly so that it
can be understood and carried out.

The context of action being the motive of task-
oriented groups means the importance of "doing" is
recognised as a means of learning. The combination of
task-oriented groups and systematic problem-solving meant
that it was possible to approach the operationalisation of
the three Brunerian (1960) levels of knowing within the
microtask phase:

a) Enactive - making problem-solving structures real by
using them to design physical actions which are realised
through the group's use of the results.

b) Iconic - by using systematic problem-solving to
construct models of problems and then, operating the
problem-solving structures upon those same models.

c) Symbolic - by developing notation to represent stages
within systematic problem-solving to enable problems and
processes to be represented with greater precision and to
focus correctly upon particular stages where the
difficulties really lie: in other words to map the problem
symbolically.

Task-Oriented Group, Problem-Solving.
Another advantage of the task-oriented group lies in the
documented evidence (Bales & Strodtbeck, 1951) that such
groups go through specific stages or phases in the process
of solving problems, and that problem-solving would be

more effective if a prescribed sequence were followed.

By phases, Bales means "qualitatively different sub-periods within a total continuous period of interaction in which a group proceeds from initiation to completion of a problem involving group decision."

Briefly, the hypothesis states that such groups tend to move in a pre-determined fashion from a fixed point in three-dimensional space as they attempt to solve the various problems of:

1   Orientation.

2   Evaluation.

3   Tension reduction.

4   Reintegration.

The phase hypothesis is expected to hold true under certain specified conditions (Bales et al, 1951), the task should be such that

"with regard to orientation members have some degree of ignorance and uncertainty about the relevant facts.. with regard to the problems of evaluation... the problem not be an open and shut case... and with regard to control... there be both pressure for a group decision and the expection of further joint action.. when the three characteristics are present, we speak of the problem as being full-fledged."

Bales' approach to the understanding of group dynamics starts from the fundamental premise that group behaviour is an analogue of what occurs within the human

personality. Individuals in problem-solving activities
with others run through the same procedures as have been
found successful in previous social encounters.

Moreover an analysis of what goes on between
individuals in a learning group can provide a model of
what goes on within the individual learner, and vice
versa.

Therefore, if we are going to attempt to teach systematic
problem-solving, the task-oriented group is probably the
best vehicle to modify procedures or problem-solving
repertoires which have already been established. The
problem is described usefully by Ferguson (1982) in the
anecdote where

> "the king in the New Yorker cartoon announces that he
> can **so** repair Humpty Dumpty - but he needs **more**
> horses and **more** men. In just that irrational mode,
> we try to solve problems with our existing tools, in
> their old context, instead of seeing that the
> escalating crisis is a symptom of our essential
> wrongheadedness."

If we return to de Bono's jelly-tray analogy (1969), we
need either to develop new, conscious ways of processing
information or accept the way our memory-surfaces process
incoming information in terms of what has happened in the
past, but deal with its' implicit limitations in a new
way, as Robert Pirsig's (1976) hero Phaedrus says:

> "We're living in topsy-turvey times, and I think that

what causes the topsy-turvey feeling is inadequacy of
old forms of thought to deal with new experiences.
I've heard it said that the only real learning
results from hang-ups, where instead of expanding the
branches of what you already know, you have to stop
and drift laterally for a while until you come across
something that allows you to expand the roots of what
you already know."

Another ingredient of the medium apart from the task-
oriented group and systematic problem-solving is the
implicit difficulty of developing the skills of problem-
solving.

Fitts (1965) distinguishes three stages of skill
acquisition: the cognitive stage, the associative stage
and the autonomous stage.

Stage one, largely involves the cognitive assimilation of
information: the student acquires some understanding of
the task to be learned. The processes are stated.

Stage two, the skill acquisition or associative stage
involves frequent repetition of the task,
developing and strengthening the connections between
environmental stimuli, and the appropriate responses.

Stage three of Fitts' type of learning occurs much later
in practice. Initially the student seems to over-
concentrate, but through the "automatization of responses"
the skilled individual "seems to have all the time in the
world."

The difficulty regarding the development of skills such as systematic problem-solving lies in the need to develop these skills irrespective of the particular environment one happens to be in.

Somehow the student has to be skilled irrespective of context, otherwise the application of the systematic approach becomes limited and context-tied, the central contradiction which traps outdoor management development from having transferability into everyday life of managers. The original means can, with time, become institutionalised into an end in themselves. The answer is to create a medium which deliberately uses aspects of games (Berne, 1964) to provide a means which is deliberately abstracted from reality, in order to ensure that the way process (in this case, systematic problem-solving) is employed to play the game is continually reviewed. Berne describes games as "the only completely satisfying answer to stimulus-hunger, recognition-hunger, and structure-hunger"; and a game as

> "an ongoing series of complementary ulterior
> transactions progressing to a well-defined,
> predictable outcome. Descriptively it is a recurring
> set of transactions, often repetitious.. "

Berne goes on to define a game as basically dishonest. de Bono (1978) continues this theme of the ulterior use of games in terms of developing strategies, and grudgingly accepts the usefulness of games for generating attitudes and insights into one's own thinking processes; pointing

out that game situations quickly show up a habit of mind.
de Bono sees the main drawback to games as lying in the
difficulty of transfer:

> "it is more difficult to transfer skills that are
> learned in a specific game to more general
> situations. Ideally a game would have to be so close
> to real life as to be indistinguishable from it in
> order to develop the appropriate skills."

It is interesting to discover what may be de Bono's blind
spot. He recognises the dynamic possibilities inherent
within games and yet fails to see the importance of never
playing the same game twice, nor ever allowing the game to
become more than just a means to an end. When he talks
about "games" one gets a strong impression that he is not
talking about business simulation games but about formal
team sports, in almost the same way that Robert Graves
(1929) talked about the use of football and team-games as
a means of officer selection toward the end of the first
world war

> "our final selection was made by watching the
> candidates playing games... those who played rough
> but not dirty, and had quick reactions, were the sort
> needed, and we spent most of our spare time playing
> games with them."

The microtask games do not share this characteristic, they
are dishonest in that they use the idea of the game to
generate emotions or a dynamic within the group as

described by Bales, to underline the use of systematic

problem-solving process.   Thus the idea behind the

microtask is to use specifically-designed games or

microtasks to exercise and develop the skills.

Unlike Fitt (1965), Michael Argyle (1969) suggests a more

specific parallel between motor skills and social skills.

Argyle uses Welford's (1958) definition of skill as:

> "an organized, co-ordinated activity in relation to
>
> an object or a situation, which involves a whole
>
> chain of sensory, central and motor mechanisms.   One
>
> of its main characteristics is that the performance
>
> or stream of action, is continuously under the
>
> control of the sensory input.   This input derives in
>
> part from the object or situation at which the
>
> performance may be said to be directed, and it
>
> controls the performance in the sense that the
>
> outcomes of actions are continuously matched against
>
> some criterion of achievement or degree of approach
>
> to a goal."

I think we can also include systematic problem-solving

skills within the definition, with the proviso that it is

understood that these skills are initially developed

within a Balesian (et al,1951) context of microtasks where

> "it may be assumed that the functional problems of
>
> orientation, evaluation, and control are each to a
>
> major degree unsolved at the beginning of observation
>
> and are solved ... during the period of observation."

Conclusions:

The lesson to be drawn from the RSA's "Education for Capability" is that we have an education system where students specialise too early, and learn to generalise too late, where the learning medium has become identified as an end in itself, and the original message has been lost.

My use of task-oriented groups was largely a pragmatic adaptation of the Army's official task-culture. I found the games idea of microtasks with overt agenda to be the best way of escaping the context "trap", and that by using the producer/imitation tendency it might be possible to defeat it, by making it more selective as well as systematic.

Chapter Four: Enter the Master.

In this chapter, I talk about the influence of observing a professional practitioner in the teaching of problem-solving: Professor Keith Jackson, sponsored fellow of the Comino Foundation, of the Bulmershe-Comino project at Bulmershe College of Higher Education, Reading.

The full development history of the microtasks and the macrotasks will be covered in Chapters 5 & 6 respectively.

I was contacted by Peter Lewis at the beginning of February 1984 with regard to working together again on another INSET, but this time with Keith Jackson as the originator of the processes.

Peter had recently read Susan Thomas's frankly hagiographic article in the Times Educational Supplement (1983), concerning Keith Jackson's work at a secondary school in Oxfordshire. Peter thought that it might be possible (with the professor's kind and sympathetic agreement), to use Keith Jackson as a kind of genial stalking horse: as someone with perceived credibility in the general field of education, as a neutral non-threatening means of introducing one simple idea into the Army education system.

This idea was to suggest that there were neutral, functional processes or systems for dealing with problems which might usefully and inexpensively be taught without getting involved in threatening the status-quo of

institutionalised context and role-tied, leadership
training packages, a potentially high-risk approach which
would itself involve defining a problem which officially,
did not exist.

The maximum we could hope for was the acceptance of
the idea of such processes being usefully taught to junior
officers, and senior non-commissioned officers as a kind
of non-threatening, bolt-on device, a means of enhancing
existing training as opposed to establishing a new
perspective or approach in its own right.

I read Susan Thomas's article, and agreed with the
view that

> "teachers should be good at solving problems and
> getting results, in practice they often aren't...
> teachers assume that traditional methods are enough.
> When they see that these aren't achieving the the
> right results, they don't correct the teaching
> patterns. In other words," he says ", they are not
> extending managerial control over the learning
> system."

I was interested to note the lack of information
concerning an actual teaching method in this article. The
closest detail in the article related to

> "teaching the basics of problem-solving - setting
> objectives, identifying and analysing the obstacles
> in their way, finding ways of dealing with them and
> monitoring both their progress and the quality of the

result at the end of the exercise."
Keith's words seemed to encapsulate the process admirably.

Peter and I arranged to meet Keith Jackson at Bulmershe
College of Higher Education in Reading, on the afternoon
of Friday 17th February 1984.

Peter had previously met Keith Jackson and discussed
the "management of innovation" motivation for Keith's
application of systematic problem-solving to the area of
leadership.

Keith Jackson was as concerned as we were to reduce
the "fire and forget" aspects of this course's
significance and undertook to ask Susan Thomas to cover
the INSET, in the event the educational journalist
undertook to attend the last three days of the course. We
decided that my own unit at Colerne would be an ideal
venue with its open grounds, living and teaching
accommodation. The course dates would be from the 21st to
the 25th of May, 1984.
A significant, valid but often unstated motivation for
instructors involved in INSET within the area of problem-
solving, leadership and communication skills is the
acquisition of other instructors' working repertoires.
For fresh instructors, it can mean an introduction to
"best practice" and for experienced instructors it can
mean seeing different approaches which can enliven a
tired repertoire. After the feedback from the Burnham
Beeches we knew that students would be looking for

functional, proven material to fill a gap in the
timetable, as well as new perspectives. After reading the
TES article, Peter and I felt sure that Keith Jackson must
have developed effective methods of

a)   Systematic problem-solving.

b)   Teaching,

c)   Exercising, and

d)   Confirming via feedback that the method had been
learnt and was part of the student's operational
repertoire.

Susan Thomas herself had said

> ".. after several sessions with Keith Jackson I found
> myself thinking systematically in daily life and when
> crises occur I get to the heart of the problem very
> quickly."

For me, this was an exciting opportunity to see a
professional's "bag of tricks" being worked to exercise
and develop systematic problem-solving; and in particular
to examine the medium he employed to develop systematic
problem-solving in his students.

Planning for the Course.

We decided that the aim of the course would reflect the principles being taught:

"To apply the principles of problem-solving to self-training in leadership."

and that this would be achieved by:

a. Study of the principles of solving problems and getting results.

b. Practice in a variety of problem-solving experiences.

c. Analysis and review of these experiences.

The students would be a mixture of civilian educators and trainers outside the MOD (3), and both RAEC officers (4) and civilian MOD lecturers (3) involved in leadership training within the Junior Army.

At this point, we began to discuss how the INSET's aim and enabling objectives could be achieved within the four working days available. Keith Jackson introduced us to a series of 4 buff, A2-sized posters overprinted in black (see page 4.7 and Annex C). Keith explained that these four posters were his patent "system". We looked at them carefully, initially, they seemed to cover four topics:

1. "Getting Results by managing a System".

This seemed to be a cybernetic, open systems model which implied that the way a manager or "results-getter's" objectives were translated into instructions for his

"system" and subsequently modified, would be as a result
of feedback from his "system".

There was no explanation of what Keith meant by "system"
or definition of what his system included. At first
glance, it reminded me strongly of Argyle's (1972) motor
skill model.

2.   "Stages of Problem-Solving."

This chart (see next page) prescribed five stages of
problem-solving:

>   2/1 Formulation - which consisted of three sub-
>   stages of detection, identification, and definition.
>
>   2/5 Interpretation.
>
>   3/5 Constructing Courses of Action.
>
>   4/5 Decision-making.
>
>   5/5 Implementation.

These stages seemed reasonably familiar, though each
process and sub-process seemed to imply yet further sub-
processes through their vagueness.

3. "Steps in Analysis". This chart was not related to the
other three. Initially I decided that it must be an
expansion of what my teacher's eye had seen as "missing"
sub-processes inherent within the "interpretation" stage.

>   3/1. List the elements.
>
>   3/2. Consider the elements.
>
>   3/3. Consider relations.
>
>   4/4. Consider and evaluate the whole.

Getting Results by managing a System

Objectives

Manager (Result getter) — Instructions → **System** → Results

Information about
a) what is happening
b) the quantity and quality of results
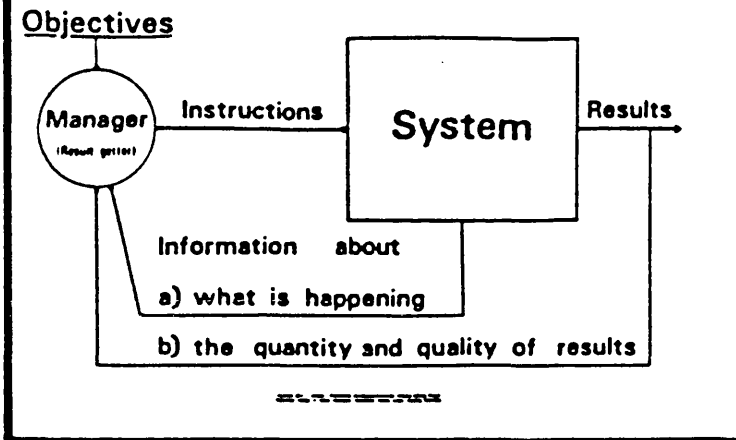
Stages of Problem - solving

Formulation
- Detection
- Identification
- Definition

Interpretation

Constructing
Courses of Action

Decision - making

Implementation

The Problem - Solving Process

Interpretation

Constructing
Courses of
Action

SOLUTION · FINDING

Formulation

Decision - making

Completion & Review

Planning & Preparation

RESULT - GETTING
or Implementation

Action & Control
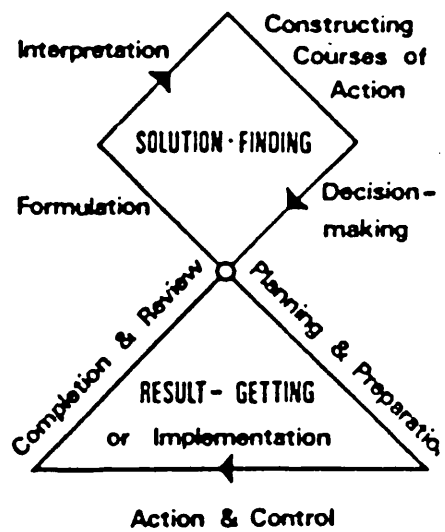
Steps in Analysis

1 List the elements.

. 2 Consider the elements.

3 Consider relations.

4 Consider and evaluate the whole.

I realised that it had clear systems analysis overtones
and might possibly apply to the "system" in chart one.

4. "The Problem-Solving Process." This chart rather
neatly redrew the first four problem-solving stages as a
rectangle with each side representing a stage
(formulation, interpretation, constructing courses of
action, and decision-making) and interfaced with a
triangle representing the implementation - now retitled:
"results-getting" stage. At the interface corner of
decision-making/formulation, this "results-getting" stage
became a triangle of three sub-stages:

    4/1 Planning and preparation.

    4/2 Action and control.

    4/3 Completion and review.

At this stage, I had not read Keith Jackson's "The Art of
Solving Problems" (1975), and assumed that the relative
ownership aspects clearly linked (in my mind at least) to
systems theory were dealt with there. However, I did ask
a question regarding the extent to which his system was a
product of systems approach; Keith seemed to misunderstand
the question and categorically denied any such links,
telling me that he only used his own system and was not
interested in using anyone else's.
It seemed that he had recreated some aspects of systems
approach independently and was quite convinced of their
uniqueness. However, his response to this question

indicated a sense of vulnerability in this area with an accompanying freeze in atmosphere - I wanted to ensure that the meeting to plan the INSET went on and continued to be a success, so I ceased to ask further questions about the intellectual background to his problem-solving system.

Peter wanted to get down to planning the detailed programme for the INSET so as to issue it to the participants as soon as possible, so we got down to planning.

Peter asked Keith whether he had any preferred way of doing things, referring to the Oxfordshire secondary school session covered in the Susan Thomas article.

Keith explained that it only took an hour or two to put over his method, and that having done so, the usual course was for the students to produce or suggest their own problems and then spend the rest of the day exercising the system under his critical eye. Initially, this method seemed to cover the problem of transferring the systematic problem-solving skills into a working real-life context, with the advantage of synectics of ownership remaining with the problem-poser. However, Peter and I had learned, in the light of previous micro/macrotask INSET at Burnham Beeches, that it generally took at least two days to introduce and exercise a new model so that students could, usefully and independently, operationalise a concept; followed by a realistic field-test and at least

a day to build up the feedback and confirm what it was
that the students were usefully carrying away with them -
in order to make it part of their teaching repertoire.

It strikes me now that we should have applied the Jackson
method here, and formulated the problem instead of
inquiring about preferred repertoire or "courses of
action," but our deference seemed appropriate at the time.

At this point in the proceedings, we all realised that if
we defined a session as half a working day, after Keith
Jackson had completed his teaching input session and
chaired a feedback session at the end of the course, we
were left with three whole days or six sessions to
exercise his method. Keith regarded us complacently and
repeated his suggestion that students be briefed to come
to the course with problems to exercise and develop the
course's aim.

Peter and I looked at each other with some concern. We
both knew that after the last INSET, students would have
high expectations of being able to come away with
functional material to teach with, and that to expect to
deal with topics on an ad-hoc basis would suggest that we
were basically lazy. We knew that whatever happened on
this course, an open-ended structure without "meat" on it
would demotivate the students and destroy our credibility.
A largely theoretical approach to using systematic
problem-solving kept the learning within a passive
learning mode, maintaining Keith Jackson as a kind of

looming "dea ex machina" figure but the audience within the Junior Army had acquired a healthy expectation that theory would be complemented with action.

Similarly, like any teacher, if we didn't organise our resources and their settings, we were losing control of the learning process. It looked as though Keith's ownership extended only to the teaching of a systematic problem-solving process and didn't include any tactical repertoire for teaching beyond demonstration.

I realised why I was present at this meeting. Peter had invited me there as a practical long-stop, ideas resource in case of just such an eventuality. Peter nudged me, "tell Keith about your microtasks and the macrotasks exercise within the Forest of Dean, Victor." I pointed out that the microtasks were largely a result of the design concept of the Burnham Beeches INSET, but that I had a sequence of eleven experimental microtasks, some of which might be suitable for Keith's system. We could also use some of the macrotasks within the Forest of Dean on Wednesday 23rd May by leaving some of them in situ following a Macrotask exercise on the Monday and Tuesday. This seemed to go down well, a collective sigh of relief was breathed and Peter and I agreed to meet the following week to develop the smaller administrative detail of the remaining six sessions.

The final programme looked like this:

Day/Session	Activity:
1/1	Assemble/Administration: teams allocated.
1/2	The Art of Problem-Solving (KJ):pm.
1/3	Leadership questionnaire prepared by teams.
2/4	Interviews, evaluations, review.
2/5	Microtasks.
3/6 + 7	Macrotasks.
4/8	Teams design microtasks.
4/9	Teams evaluate each other's microtasks.
5/10	Course feedback. Final Administration.

We managed to squeeze two extra sessions into the programme, by working in the evenings as well and planning for some overrun. We managed to bring in my idea of each team experiencing each other's microtask and hopefully then seeing it from the student's point of view.

The Course: 21-25th May 1984.

Once the course was assembled and complete after lunch, we divided the students into two teams, each with two serving military RAEC officers and three civilian instructors. Initially these teams were known purely as teams one and two, but later on, this changed to team A (also known as the "A" team) and team B (who began to believe that they really were the "B" team.)

Team Personnel:

A:	Maj. Brian Harpham	B:	Maj. Phil Norman
	Capt. Phil Wilcox-Jones		Capt. Nick Kyte
	Tony Shelby-Jones		Bill Wayman
	Brian Wilson		David Blunn
	Fred Pattern		Nigel Nicholls

Keith Jackson took over an ante-room in the Officers' Mess and after each individual present had introduced himself and his function, Keith began his presentation.

His method was frankly didactic as he proceeded to talk us through the four ubiquitous diagrams. He did however depart from the descriptive method on several occasions: Keith set us an ambiguous problem, he held up a needle and invited us to estimate the number of threads it was possible to thread through its eye. He then held up a similar needle with over twenty threads through its eye. The point of this demonstration was to show that if you were in the possession of a good method, it was possible to achieve a significant improvement in results. Momentarily this metaphorical demonstration reminded me of Miyamoto Musashi's,

"The teacher is as the needle, the disciple is as a thread. You must practise constantly."

(1974, orig. 1645)

The other demonstrations involved illustrations of the "steps of analysis". He issued the teams with tobacco-tins containing old buttons and different types of stones

- demonstrating how many different relations and
categories there were present, in considering even these
everyday items as elements. This exercise reminded me of
Samson's (1970) self-instruction course in improving
problem-solving methods, using six steps in analysis
instead of Keith Jackson's four.

Samson (1970)	Jackson (1975)
Classification	List elements
Qualification	Consider elements
Structure analysis	Consider relations
Operation analysis	Consider and evaluate the whole
Analogy	
Definition.	

The second exercise practised us again in systematically
running through the "steps in analysis". This time we were
presented with a drawing representing the main features in
a park and told:

>"If a walk consists of starting at A and going to
>point B and returning to A without passing any point
>twice, what is the greatest number of different walks
>that you can find, keeping to the dotted paths?"

This problem was quickly resolved by working through the
stages of analysis in the correct sequence and each of the
resulting options being worked through and "logged" by
developing an options network-matrix.

> That evening the teams considered the course's aim

and enabling objectives and prepared a leadership questionnaire, the purpose of which was to look at the area of leadership in terms of the views held by thirty Junior Leaders. Keith's idea was to use this questionnaire as an opportunity to practise the complete method of problem-solving and getting results. The following morning of day two, the teams carried out their research and found themselves in agreement: apparently all the Junior Leaders interviewed agreed to a greater or lesser extent that "leadership was a series of skills, which could be practised and developed with the aid of feedback." So far, it looked as though the teams were responding well to the Jackson methodology in spite of the sotto voce remarks about its simplicity. Several team-members asked Peter and myself when we were going to "get on with it" and give them "some real problems". Within a few minutes it began to rain, which meant we had to switch to a wet-weather programme option.

After lunch, the teams were taken to an isolated hangar on the airfield, and presented with some of the experimental microtasks.

By this time, Fred Pattern had renamed his team the A-team, and the other team by default had become the B-team. The competitive element began to develop, initially as a motivating joke but later in earnest, significantly affecting the team's approaches.

Before we began the microtasks, Peter used a shelter-

building exercise to develop the teams in the practice of working together. This was an old approach we had used before of giving each team a supply of ash-poles, ponchos and string and telling them that they must construct a portable shelter in which they can expect to spend the coming night.

Team A decided to elect a leader who had some experience of survival techniques: Brian Wilson. Brian knew exactly what he wanted, his specialist role combined with his autocratic direction of the team led to an excellent shelter, but resulted in a team which wouldn't talk to him for the rest of the day's activities, unless it was absolutely necessary to the task.

Team B was self-consciously democratic in its allocation of time for, and recognition of, individual contributions. Brainstorming was applied to collect the team's potential, and a corrugated, unstable shelter crouched unsteadily in front of its proud team.

The Microtasks:

All these microtasks, their developmental history and design will be discussed in a further chapter.

1. The Jigsaw Problem. In this task, each team is given a cardboard box containing a wooden jigsaw of twenty pieces. In the box there is also a soft pencil and a rubber. The teams are told that at the beginning of the task, all the pieces must be face-downward, and spread randomly over the

surface of the desk. At the end of the task, the jigsaw
must be correctly assembled and the picture face, upward.
The team's action time-limit from the beginning to the end
is a maximum of 30 seconds. The team has 45 minutes to
solve the problem systematically. No new items may be
introduced into the situation.

2. The Cone-dance. Each team is given a set of six large
traffic-cones and a different sequence of formations to
lay the cones out in. The start and finish positions are
identical, the remaining seven formations are different:
star, diamond, triangle, crucifix, T, L, X. In each
formation, apart from the start, the cones must be at
least two metres apart. The time limit, once the action-
phase starts, is a maximum of 30 seconds. During the
action-phase, there may be no speech, use of notes or
handsignals. The team has 60 minutes to systematically
solve the problem and complete the task.

3. The Cobex ("Can of Beans Exercise"). Two desks are
laid out with a series of items within a defined task
area. The teams must cook and eat the beans, using their
manpower and chosen combination of items within the area.
Anything used must be returned to its original position in
its original state, except the contents of the small can
of beans.
The action time within the area is limited to six minutes.
No-one may communicate from outside the area to those
inside. Everyone within the area must be blindfolded and

may not speak, whisper or whistle. The task must take place within the area and no extra items may be introduced. Sixty minutes is allowed for the teams to deal with the problem and develop a working plan to put into effect. Experimentation with items within the area prior to the task is permissable.

I presented these microtask to the teams in the above sequence, acting as a kind of umpire of last resort and time-keeper. Both teams set to with a will and some initial hilarity. The initial superficial simplicity of the microtasks was quickly dispersed once the teams attempted to rehearse their plans within the time-limits. It was quickly realised that task time-limits were initially impossible to keep to, this led to some shocked reappraisal and review whilst problem-solving time ticked away. In fact, on all three microtasks, I had to give extra PS time. The competition between the two groups continued to heighten, in spite of Brian Wilson's sad isolation in the A team. It seemed as though Brian could not, at the moment, compromise. He was capable of being either a directed subordinate, or an autocratic leader.

Throughout this phase, Keith Jackson had continued to preside with some interest as the teams worked noisily through their microtasks, the empty hangar echoing to their shouts of derision and victory. I did notice that although the teams seemed implicitly to be using process

to deal with the microtasks, their language did not seem
to reflect the terms of Keith's system, and they seemed
(to me) to be ignoring stages in the procedure which they
felt they didn't need to exercise. Worryingly, at the end
of the microtask, no system-review was taking place.
Unfortunately, as provider of problems, I was too busy
dealing with the logistics of the previous and forthcoming
stages to do much more than notice, and even then I
decided that perhaps I was being too finicky, they were
all adults and instructors after all.

I should have realised that the process that I was
observing was less one of problem-solving than of team-
building. The problem that was being solved was the
problem of the group and its development of identity and
characteristic procedures for dealing with its
environment.

At the end of this session, the excited teams wanted
to do more, instead of evaluating their progress. Keith
asked me to provide further problems and so I presented
the teams with some of the introductory team-building
problems designed for developing recruits' experience of
teamwork. These problems are designed to involve co-
operative teamwork and lots of shouting since no realistic
problem-handling time is built into the tasks. They
worked on into the darkness and the rain. Towards the
end, I had to remind them that they would miss their tea
if they didn't stop, and that they really ought to keep
dry for this evening and tomorrow's activities. After

some grumbling, the teams were transported back to the
mess for a late tea and an end-of-day review.

The review was conducted initially within the teams,
relatively informally around the bar in the mess. In
order to help us to achieve the third enabling
objective ("analysis and review of these experiences"),
and make a good use of the aim and other two enabling
objectives, I asked the teams to give me their template
feedback proforma to be reproduced for use in the coming
macrotask exercise.

The A team was concerned at the problem of Brian, and his
role within the team during the shelter problem. The team
was conscious of the need to bring him into the team, and
Fred Pattern got Brian to discuss the problem of his
behaviour both as leader and follower in front of the
team; Brian very courageously acknowledged his "faults"
and was anxious to deal with it now so that the team could
move forward onto new issues. Fred's courage in opening
up this topic, and daring in discussing personal
motivations healed a wound in both Brian and the group,
the acknowledgement of which gave Brian the freedom to
experiment with a "looser" role definition over the next
few days instead of operating at either of the ends of a
behavioural continuum. Similarly, the discussion of roles
and complementary personalities gave the group a feeling
in their own eyes of having experienced a real learning
crisis which brought them closer together than the B team.

Team B were rather self-congratulatory. They had the
edge over team A on all the microtasks after the shelter
problem, their team having smoothly deferred to each
other's specialist skills and ideas: Fred's deliberate
retitling of team 1 into the "A team" was becoming a bit
of a joke. Their microtask work had been consciously
creative and democratic without any major crises from
which to learn any new lessons. The democratic aspect of
the B team did leave them with a sense of not having gone
as far as a group, as the A team. That it was only
briefly, under the pressure of the teamwork problems and
the poor conditions of rain and darkness that they had
abandoned the niceness of democracy and enjoyed the
primacy of the task at the expense of managing the social
aspects of the group.

It was team B which began to talk about the design of
problems to develop systematic problem-solving. The
philosophy behind the micro/macrotask idea and some of the
conclusions of the last course came out, helped by the
presence of Philip Wilcox-Jones, who having been on the
previous INSET at Burnham Beeches was interested to have
tasted some of the provisional fruits of the
micro/macrotask idea.

Towards the end of the session the teams looked forward
and asked about the source of the ideas for the various
tasks that day, and what would be the difference between
today's microtasks and tomorrow's macrotasks in the Forest

of Dean?

I replied that they were really all the same kind of task, explaining that they were all just a means of exercising the same kind of muscles to a greater or lesser extent. This gnomic reply meant that I had to explain the chosen context and direction of my research, the design of problem-solving training materials and methods, and different teaching philosophies. The characteristic design ingredients of groups, stress in the form of time-limits, reduced perception, and task limitations led to an explanation of my interest in task-oriented groups as a vehicle for developing systematic use of problem-solving processes.

Keith Jackson left the officers' mess at the beginning of this rather fruitful session to take Susan Thomas to dinner, and thus lost the opportunity to confirm and assess the direction in which the teams were developing.

By ten o'clock on the third day of the course, we had arrived at the macrotask exercise headquarters in the Forest of Dean and flown into controversy.

The Contract.

I had driven early to the exercise area with my assistant, Sergeant Philip Stonier, to check the macrotask areas and lay out the macrotasks and their associated equipment. At 09.35 a.m., the large white bus containing the students, Keith Jackson and Susan Thomas arrived, followed by

Captain Philip Crisp RCT, as an extra Directing Staff to guide the B team.

The teams were going to follow a programme of 6 macrotasks, including:

Mine Map   Search

Bridge Blow   Ferry Raft

Cross the Gap   Snatch

(There will be a fuller discussion of the microtasks in Chapter 6.)

We had checked the macrotask areas, completed our administration and briefing of personnel for the manned macrotasks, and even brewed up a cup of tea! The arrival of the white bus meant that we could start. To my surprise, no-one got out of the bus, even to stretch their legs. We waited a few minutes, looking through the windows, it seemed as though an intensive debate was going on with Keith Jackson at the front of the bus. I signalled to the driver to let me in to the bus, and sat down by Peter Lewis asking him, what was going on? Peter explained that Keith Jackson wasn't going to let the students out of the bus, until he was sure that the students really were going to carry out the exercise aim and objectives.

I sat and listened. The problem was basically one of semantics and attitudes. Everything the students said to Keith had to be in <u>his</u> terms, had to be slowed down into his generalised vocabulary. The problem was one of communication. The students' familiarity with systems

approach jargon and the related techniques of applying
systems approach to training in terms of framing
objectives meant that they were using this jargon as
opposed to Keith's. Everyone was showing signs of
impatience with Keith's stonewalling, and the situation
was becoming one where Keith was looking very much like a
pedant. It got to the stage where Keith accused the
teams, again, of ignoring his system in preference for one
of their own devising. At this point, students began to
ignore Keith and talk among themselves, commenting upon
what they saw as the limitations of his system's language
and approach. It began to look as though the teams would
dethrone Keith and carry on with the exercise without him.
Keith continued to say that he could only go on if he was
sure that everyone understood the purpose of the exercise
that they were all involved in.

Philip Norman sensed that this republican sentiment
would mean an open revolt and destruction of Keith's role
and credibility, and he wisely intervened. Philip asked
Keith to allow them to discuss the problem among
themselves, and would he mind leaving the bus for a few
minutes? Keith left the bus.

Inside the bus, emotions ran high. The teams were
vocal in expressing what they saw as the legitimacy of
what they were doing, feeling that they were applying both
implicit and explicit principles of solving problems to
the area of leadership; and that Keith's failure was one

of interpretation, a lack of flexibility on his part,
revealing severe limitations in interpreting both events
and speech.

   This critical line went on, but Brian Harpham,
supported by Philip Wilcox-Jones, put things back on a
sensible path, by defining the problem as one of
interpretation and control. They supported each other in
suggesting that what Keith wanted was deference and
submission. If this was given, they could carry on with
the exercise as long as they reassured Keith that they
were using his system, even if they weren't using his
words, and that they needed him to umpire and guide their
performances. I was surprised at the pragmatic cynicism
of the teams, but even more surprised at their unanimity.
A vote was called for, both teams agreed to the idea of
telling Keith, that "of course they were going to do it
his way, it was just a misunderstanding."

   Fred, Brian and Philip explained the team's
resolution to Keith, he nodded his satisfaction and began
to smile. The teams left the bus.

The Macrotask Exercise.
After our delay, it didn't look very likely that we would
complete a full sequence of macrotasks.
The B team began with the Search macrotask. This problem
involved a search within a bounded area for a contaminated
live casualty, selection, marking and laying out of a
suitable helicopter landing-zone (LZ), and removal of

contaminated casualty from search area to LZ. The in-
built difficulties revolve around the weight of the
casualty, the need to construct a stretcher and the
contamination aspects: the search area must be searched in
Nuclear, Biological and Chemical warfare (Noddy) suits and
respirators which severely reduce breathing, field and
range of vision, movement, and verbal communication.
Ponchos, string and LZ panels and criteria are provided.

Phil Norman was elected as leader, he delegated Bill
Wayman to select and set up the LZ, whilst the remainder
of the team put on the NBC suits. Unfortunately, as the
physical discomfort and stress in the suits built up,
David Blunn (who was quite unfit) began to opt out of
committing himself to the team's work. As the others
trotted down to the search area with an air of commitment
(the script having suggested that urgency was a factor in
the survival of the contaminated victim), David walked
beside Susan Thomas (1984), complaining:

> " Hell, they'll knacker themselves running. I can't
> run. I can't bloody breathe. Have I got this thing
> on right? Does it adjust? Can you see a way to get
> more air?"

At this point Philip Norman reappeared and pressing his
mask close to David's roared impotently at his lack of
urgency:

> "There's a man out there dying... get your *******
> *** moving and run, damn you!"

The team got going, searched the area, predictably the

team-member finding the casualty had to physically contact
each member along the search-line across the area due to
the failure to establish unambiguous visual signals before
the search. The casualty played his part with passive,
weighty indifference to his mishandling as the team
sweated and swore and panted with collapsing
untested stretchers of string, old poles and a
poncho. They progressed painfully across the search area,
the main road, and a small conifer plantation to the LZ.
At this point, they couldn't find Bill Wayman. Philip
swore, and sent Philip Wilcox-Jones back to the search
area to look for Bill. Bill was found and brought to the
LZ. He had been found within the potentially contaminated
search area, without a respirator or Noddy suit.

The feedback session was bitter and personal. David
was attacked over his lack of commitment, he had given
"every indication of not caring about the realities of the
task". Jim's defence was

> "that it was just a game and he was not knocking
> himself out for a game. If it had been for real
> even, it would have been better to husband his
> resources and have the strength to complete the
> task."

The next macrotask was "Cross The Gap" (see 4.28, over).
In spite of the extensive feedback following the previous
session and the mention by Philip of the TOGPSP technique
of first building a model of the problem and then

SAFETY ZONE

TOP ROPE

K₂

S

STAKE

K₁

S

BELT

K₃

BOTTOM ROPE

FINISH

FBOB

FBOB

B

B

START

SAFETY ZONE

TOP ROPE

K₃ KL/H₁

KL/H₁

K₄

KL/H₄

BOTTOM

K₁

KL/H₂

K₂

KL/H₃

FINISH.

←— CHASM | GAP —→

CHASM | GAP

SAFETY ZONE

DIRECTION OF PULL

= 4' SEWN S/B TAPES.

KL/H = KLEMHEIST KNOT

B = BOWLINES

K = KARABINER

S = SLING (CONTINUOUS LOOPS)

KL/H LOCK THE ROPES TENSIONED VIA THE 2:1 SYSTEM, SECURE THEM IN K₁ AND K₃.
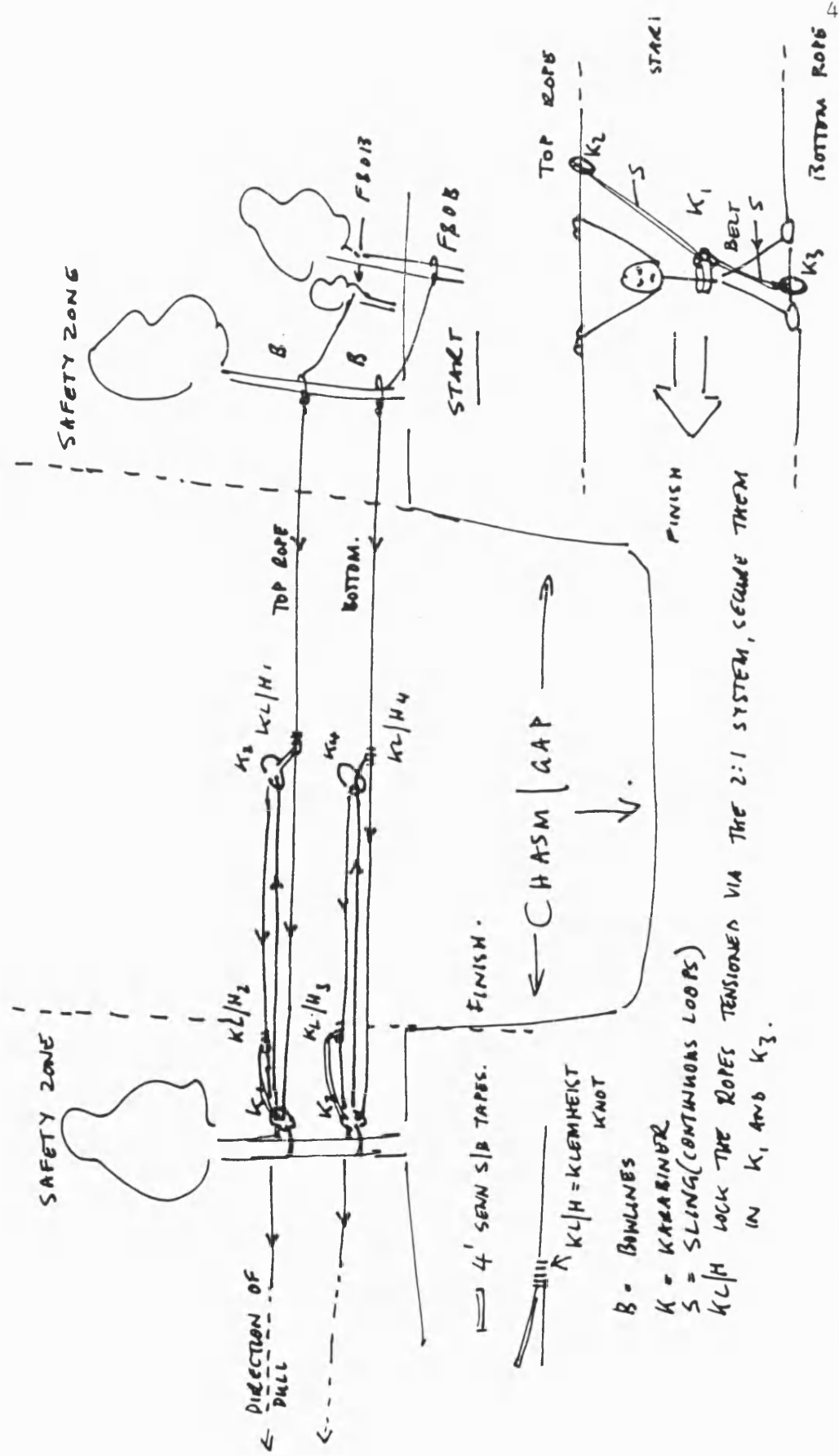
Ⓒ TOGPSP/N J BATH V. NEWMAN.

XTG : CROSS THE GAP.

developing a plan using the model elements, this macrotask
went the same way as the last with an emphasis upon action
as opposed to modelling the problem phase-by-phase, and
then reinforcing the plan by a timed rehearsal.

This problem involves a serious safety requirement.
Briefly, there are two static horizontal lines under
tension, across a wide gap in a railway embankment. Team
members may only cross wearing a climbing-belt, connected
simultaneously to both the top and bottom ropes with
slings and karabiners. Only enough equipment is provided
for two members to cross at one time, plus a spare 45
metre rope, an 8 foot sling, and a single karabiner.
The team has 45 minutes to prepare to act. The task itself
must not take longer than six minutes. Usually, the teams
have to cross with up to 100 kilos of personal and
exercise equipment within the time-limit. On this
exercise, the teams had only to get themselves across
within the time-limit. Nigel Nicholls was elected as the
B team's leader. The organisation was "chaotic and they
exceeded the time limit. David crossed at a respectable
pace." Nigel, exasperated said "It wouldn't have made any
difference if you had known we were running out of time,
you still wouldn't have gone any faster, damn you!"

From this point on, David remained a probationary
member of the B team. The democratic, creative,
recognition of each other within the microtask session had
not team-built the entire team.

The A team meanwhile had approached the "Bridge Blow"

macrotask. This macrotask involves the simulated
demolition of a stone arch within a railway embankment

The team are provided with a specification and series
of drawings of the "bridge" (see example, page 4.31 over)
and told that because of the limited explosives available,
the three explosive charges must be evenly spaced along
the roof of the arch, then set off simultaneously, using
simulated detonation-cord (sparklers). The charges are in
square-sectioned lengths of industrial drainpipe, with
nylon cord carrying-handles coming out of drilled holes in
the charges. Also available for the team is a length of
nylon tape slightly longer than the arch, a box of
matches, some solid hexamine fuel cubes, and four
sparklers.

The team is only allowed ten minutes within twenty
metres of the bridge to carry out the task.
The A team listened carefully to the script, each team-
member examined the equipment, and under Fred's gentle
leadership (officially, they had decided to share the
leadership role in the macrotask phase, reversing their
microtask practice of the day before) the team built a
model of the bridge out of scraps of wood and mining waste
and scraps. Systematically, they represented each item of
equipment within the model and everyone's responsibilities
in a series of cumulative phases. The fourth spare
sparkler was burnt experimentally to gauge the burn
time, a stone was tied to each end of the tape, the

SAFETY

SAFETY

SAFETY

SAFETY

TARGET/DANGER ZONE.

SIMEX CHARGE

K K

K

K
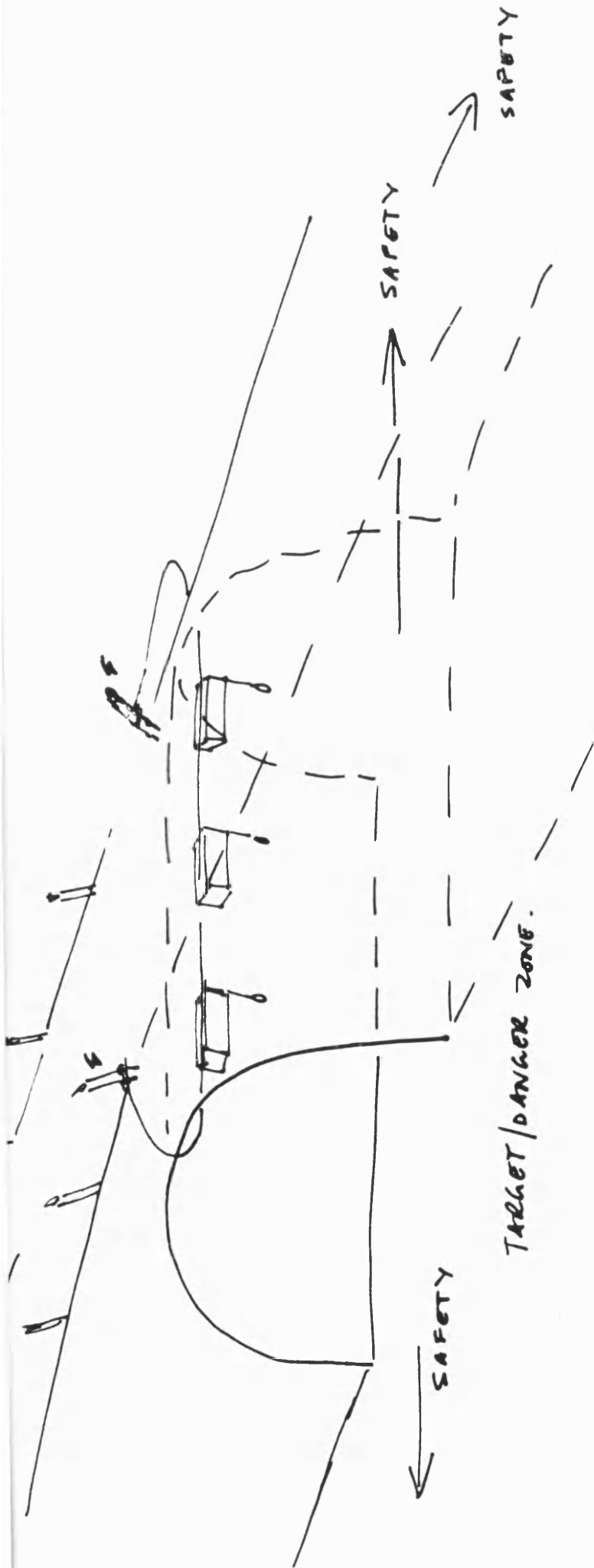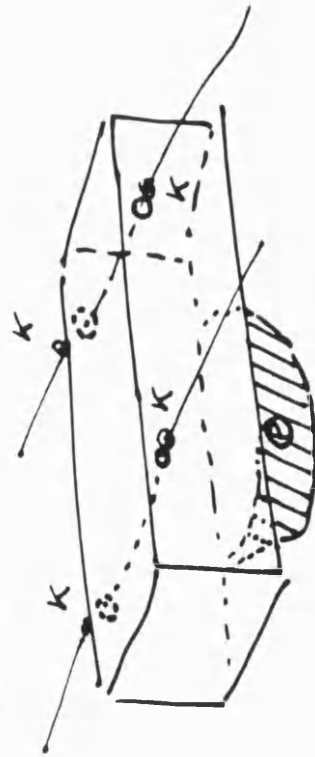
K = KNOT   S = FENCE STANDS

Ⓟ = LIMIT OF PLASTICENE, ATTACHED BY MASKING TAPE, TO ENABLE INSERTION OF STAY FUSES.

4.31

© TOC PSP | u q BATH V N8

demolition charges were tied onto the tape, and long

sticks were chosen to push the charges along the tape when

it was against the roof of the arch. The A team,

collected the task equipment and approached the target.

They seemed to have thought of everything.

Suddenly Fred stopped the A team in front of the

bridge, just outside the area and said

"let's just stop a moment and deliberately think

about something else for a few minutes, before we

commit ourselves."

The team stopped in mid-stride, and looked blank for a few

minutes. After two minutes by my watch, I looked at Fred

who called the team together. Then something very

exciting happened. A significant idea emerged. Philip

Wilcox-Jones suddenly noted that the tape onto which the

charges had been fixed at two metre intervals, was only

three metres longer than the length of the arch according

to the specifications in the diagram on which they had

based their operational model. Fred asked the team, what

do we do? Brian Wilson, who was holding his stick to

support the charges as they were raised, looked

momentarily stunned, then waved his stick:

"It's obvious, we extend the length of the tape, and

remove the need for stones to throw the ends up onto

the mouths of the bridge by tying a long pole or

stick onto the ends of the tape."

It was a wonderful moment for all of us. Fred's

defocussing exercise had demonstrated its utility beyond a

doubt. There was a very strong sense at this moment of the strength of the team as a collective intelligence if it applied its group processes consciously. I had read about defocussing as a concept, but this was the first effective demonstration I had witnessed.

The team split up, three went under the arch, the middle man of the trio supporting the charges and loops of tape, he lit the sparklers and inserted them into the charges laid out along the floor of the arch, the two stick-holders held up the ends of the sticks tied to the tape. The two on the top of the bridge grasped the stick ends and drew them toward the centre of the bridge and forced the ends firmly into the cinder and turf surface. Meanwhile underneath, Brian wilson and Tony Shelby-James arranged the charges correctly. The team retreated out of the area.

The complete action had taken just 150 seconds.

The A team's next macrotask was the Mine Map. As a result of this task, the team decided to deliberately select its leaders for the remainder of the exercise on the basis of a lack of specialist skills relating to the task's context. This would, it was felt, highlight the leader's role as a process-user.

On the next macrotask, Fred was chosen to lead because of his admitted fear of heights, contempt for the outdoors, and because the team felt his covert, manipulative

leadership so far, had been an easier ride than operating as the official leader.

As with the B team, the planning was chaotic and although the right systems "cries" could be heard, the use of process concentrated upon the rehearsal, especially the wearing and handover of the crossing kit. When the team was ready, it approached the start end of the gap, defocussed for two minutes, and then Fred began to cross. The ropes (being slightly elastic climbing-ropes) began to stretch under the his weight (as they are designed to do). Fred retreated gingerly. The ropes were stretching. "What should we do?" asked Fred, more specifically, when no-one could think of an answer, and time was ticking away, "does anyone have any skills which relate to this situation?" Tony Shelby-James suggested that the team could tighten them up by adjusting the klemheist knots along the ropes. The team spent four minutes tightening the horizontal ropes even further than before, ropes which had been just as tight for the B team's crossing, earlier that day.

The team began the crossing. Fred crossed first, then the rest of the team. It took fourteen minutes.

The feedback session was interesting.
Fred Pattern (FP):

    "The development of companionship and a degree of trust, and frankly I gave up any thought of personal injury .. and particularly you two, I'd heard your stories and I thought - I'd follow him, and I thought

OK."

Keith Jackson (KJ):

    "Training and a good experience..."

FP: "Training and trust, an important factor..."

KJ: "A good experience."

FP: "Trust.. the logic of the training and experiencing,
its emotional trust that.."

KJ: "-arises out of it."

Philip Wilcox-Jones (PWJ):

    ".. because the setting-up went well, we tied things
up, we knew what we were doing.. you (FP) went over
first."

FP: "You display confidence, you feel trust.."

All: "Yes, yes."

KJ: "Supposing that you had not been the leader Fred,
would it have been equally easy for you to be so
adventurous?"

FP: "That's an interesting point.. I don't think I would
have displayed so much savoir-faire (ironic).. I
would probably have thought of myself more, but I
certainly was thinking of the team... so I probably
launched myself with more vigour.. if you accept a
leader's responsibility you have to live up to it."

All: "Yes."

KJ: "So I think that this is a bit of evidence about the
rightness of this proposal that Brian (Brian Harpham:
BH) put to the group to change the way of choosing

the leader."

Brian Wilson (BW):

"I think it made us explore it more along the lines
that you (KJ) were wanting us to explore it, it
eliminated the expertise factor and made us only move
upon using the system."

FP: "It would be more interesting still not to be the
expert but to be of some expertise, because there
would still be a battle between your known experience
and how much did they know?"

PWJ: "Yes.. it can still be dangerous some times."

FP: "Yes, the leader can be taken by what he knows, he
says I'm gonna live by what I know, never mind that
he's had more experience, at least I know this.. "

PWJ: "Yes, yes."

BW: ".. but I think that for someone who isn't half-way
there in management, is half-way there in technical
things, that's when the real test of the system is
going to come, as to whether he can handle it..."

PWJ: "- but where did Fred get the leadership authority
knowing that you had two or three people in that
group who were with the (specialist skill) power?"

BW: "I think that's because we are a homogenous group."

BH: "We're an acquiescent group. I think that's what
Phil is getting at.. we totally acquiesce.. we
totally support the leader."

BW: "Yes, but if you had a lot of bolshy bastards, it
might be a different kettle of fish.."

KJ: "Alright, go and get some bolshy bastards."

What is interesting here, is the way the team is prepared
to consciously experiment with conditions and the use of
systems under these varying conditions, deliberately
appointing task leaders known to be without specialist
skills related to the context of the specific macrotask,
developing the links between leadership and process
skills: using process skills irrespective of context.
This is a basic issue in the training options open to
leadership, do you develop leader skills or leader style
to deal with an unpredictable operational context for
leadership? How do you lead teams of experts?

I mentioned earlier the excitement of seeing the
focussing and defocussing process in action (introduced by
FP). Another interesting academic point was the way in
which team A decided that the central problem in the Cross
the Gap task was the rope-tension. Team B, earlier in the
day had ignored this aspect.
During the Bridge Blow macrotask, the team had interpreted
the "trick" of the macrotask to be built around the tape
being too short. This was not true. It fitted, but with
only a metre to spare.
The euphoria and success of the "defocussing" and its
implied instrumentality in achieving a signal success,
meant that when the team began the Cross the Gap
macrotask, it assumed that the ropes were also part of the
problem, that the key to the problem lay in the ropes'

length, and by implication their tautness between the
anchors. Again this was irrelevant. I think that what I
saw was a variation on what Bruner and Duncker (1945)
earlier, had characterized as "functional fixedness":

> "The use of corrective information exclusively for
> the evaluation of one single hypothesis that happens
> to be wrong." (Bruner, 1964)

Much like Christopher Robin's recognition of Winnie the
Pooh's wooden pole, as the North Pole (Milne, 1926)

> "a problem-solver, is in effect, using correlative
> information exclusively for the evaluation of one
> single hypothesis that happens to be wrong. There is
> some evidence to indicate that high drive and anxiety
> lead one to be more prone to functional fixedness."

Functional fixedness combined with Bales' (1951) approach
to the understanding of group dynamics that group
behaviour is

> "an analogue of what occurs within the human
> personality. Individuals in problem-solving
> activities with others run through the same
> procedures as have been found successful in previous
> social encounters... " (Mcleish et al., 1973.)

This functional fixedness tied up with aspects of
groupthink (Janis, 1972), in the sense that like the
Rockman character in Nillson's L.P. and cartoon film,
(1974) "The Point":

"You see what you want to see,

and you hear,

what you want to hear."

In other words, I began to notice that there seems to be a
tendency to see the problem in terms of repertoire
available, and in terms of a repertoire of actions which
support our values and self-image; and it is only when the
best of your bag-of-tricks repertoire fails, that
systematic PS becomes the only solution.

Thus the concept of operational research (or operations
research as it is called in American literature) arose
because the concern in the war context was research on
military operations, with human lives as well as military
objectives at stake (Burley and Sullivan, 1986).

It's almost as though we try to reconstruct reality
sometimes to support our values, and it's only when the
cost of such strategies is expensive that we really try to
appreciate the situation. I decided to characterise this
tendency as "repertoire-search." An examination of the
script quoted shows that the time-limit in this microtask
was pointedly forgotten as a criterion of success, the
fourteen minutes was not focussed upon in the debrief.
Perhaps because the team could not achieve this aspect of
success, they redefined the task into one where new
criteria allowed them to be successful as per Bales'
(1951) equilibrium model of group development. Bales'
model states that any disturbance in the group's social

system creates a tension which is followed by an attempt
to correct the imbalance and restore the system to its
previous condition of equilibrium. The group is in uneasy
balance between task and socio-emotional concerns. The
group members experience insecurity, and act to remove the
tensions by "adaptive-instrumental" activity in the
task...

> "this failure to solve the task-adaptive crisis with
> the onset of malintegrative behaviour is true in each
> sequence of the phase movement. In other words, if
> the group cannot successfully cope with any of the
> orientation, evaluation of control phases, the output
> of expressive and malintegrative behaviour will rise.
> This is shown by fantasy, withdrawal, aggression and
> more pathological ways of coping with effect. This
> behaviour is anti-task and backward in character."
> (McLeish et al.,1973)

In other words, if they cannot deal with the task, they
have two options:

1   Remodel the task into one which they can solve
     successfully, or

2   Concentrate upon the social aspects of the group as a
     new task.

I think that there was a tendency to deal with the social
aspects in both groups as a priority. This tendency to
some extent defeated the deliberate use of system to deal
with the macrotask, whereas system was used to develop

feedback about the group. This social aspect even
extended to the A team pretending to KJ that they had
given each other instructions to search the "gunman" in
the Snatch macrotask.

Interestingly, as the team developed on the macrotasks
following on from Cross the Gap, they did become very
skilled at "overlapping", in developing the detail of the
plan and filling in gaps, though again system was more
implied than articulated.

The penultimate phase the next day involved the teams'
designing learning microtasks and testing them out on each
other.
The A team produced a variation on syndicate 4's vanishing
bridge supports macrotask from the INSET exercise at
Burnham Beeches. (PWJ was in syndicate 4!) The A team's
version involved a minefield, and defusing an unexploded
bomb within it. The B team did everything wrong when
presented with this problem, having elected their leader,
they used up all their allocated problem-solving time, ran
into action-time still undecided as a talking-shop, and
then as Susan Thomas put it "succeeded in spite of
themselves."

The B team decided to pit managers against workers,
by split-siting (very reminiscent of Leadership Trust
industrial park exercises) and communicating via a
passive, mute messenger. The managers had to plan and
communicate their plan to their workforce outside, the

managers could not see the workers' efforts, and the
workers could only ask for clarification of instructions
and not suggest alternatives. Eventually, the workers
completed the task by taking on some of the managing
group's functions themselves. "The workforce achieved the
objective because it knew what it was, and it kept its
faith in the management because it understood the
constraints on it." (Thomas, 1984)

The Students' Feedback:
On the final morning, the teams presented the results of
their learning. It was clear that they had used the
course as a vehicle for their own experiment.

The A Team.
The team had reviewed the aim of the course and produced a
an evaluation of what they had learnt in terms of
leadership and leadership training needs. They
categorized these needs in terms of learning, discovery
and reinforcement:

	Learning	Discovery	Reinforcement
Leadership	1.	3.	5.
L/ship Trg.	2.	4.	6.

1/2. **Learning** of Leadership/Training:

Pause/gestation time, use of models, feedback

mechanisms, use of system (SOPs - Standard Operating

Procedures), Brainstorming/creative thinking, self-

appraisal, focus/envisualization.

3/4. **Discovery** of Leadership/Training:

Clear objectives, use of models(*1/2),

rehearsals/training, recognition of appropriate style

of leadership (Fiedler contingency theory?), original

and creative thinking(*1/2), identify and use

strengths, establishing standards, self-

appraisal(*1/2).

<u>4.</u>   As 3 (Discovery/Leadership), but with the addition of

effective communication, and focus/envisualization*

*1/2: as already noted in 1/2.

5/6. **Reinforcement** of Leadership/Training:

Logical approach, specific delegation,

rehearsals(*3), appropriate style of leadership(*3),

trust, teamwork.

<u>6.</u>   Underpinned by 5, includes time-management, effective

communications(*5), standards, expectations of

leadership (interestingly linked in the team's minds

with focus/envisualization.), humour to relieve

tension.

Essentially, the A team had developed a kind of curriculum

- as a result of their experimental approach to

leadership, which essentially contained the skills-

approach within the categories of learning, discovery and

reinforcement.

They had categorized leadership development into three
types of overlapping knowledge: those areas you need to
know about in order to orientate yourself (learning),
areas you could learn about through deliberate use of
feedback (discovery) and self-review, and finally the
areas that needed reinforcement.

The A team and I took this "curriculum" a stage further
and developed KJ's impoverished "Getting Results by
Managing a System" by taking it much closer to its
probable original, the Argyle Motor Skill model (1972).

The A Team's Leadership Model

```
Objective-->---Leader/Manager---<-----Cumulative Feedback
               |                                 |
               V                                 |
     ┌─────────────────────────────────────┐    |
     │  1.  Criteria          (*M)         │    |
     │                                     │    ^
     │  2.  Plans of campaign/trg.         │    |
     │         explored                    │    |
     │                                     │    |
     │  3.  Ideas                          │    |
     │                                     │    |
     │  4.  Preferred methods              │    |
     │                                     │    ^
     │  5.  Rehearsal                      │    |
     │                                     │    |
     │  6.  Action plan                    │    |
     │                                     │    |
     │  7.  Gestation-period               │    |
     │                                     │    ^
     │  8.  Final plan                     │    |
     │                                     │    |
     │  9.  Final rehearsal/confirmation.  │    |
     └─────────────────────────────────────┘    |
               |                                 |
               V                                 |
          Action--->----Result---->---Review (*M)
```
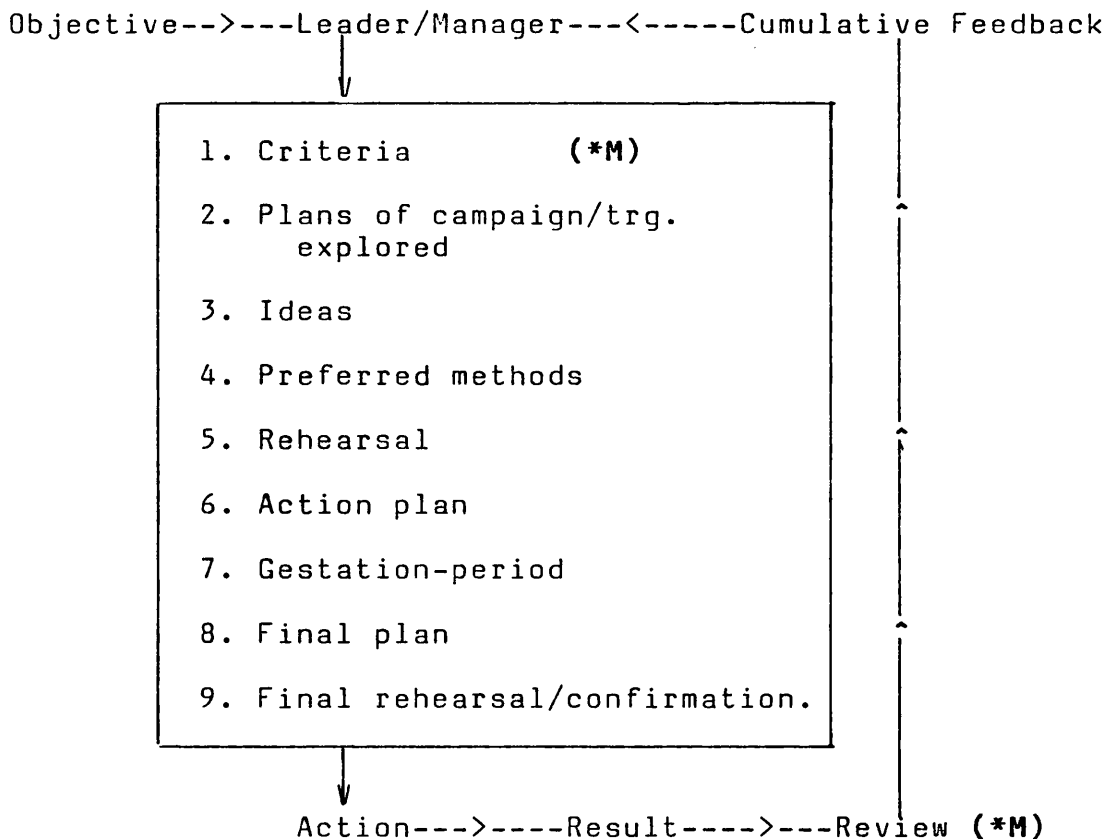
In this case, we replaced the Argyle "Central Translation

Process" (perception, translation, motor responses) with a
discrete taxonomy of steps or options.

The most understated aspect was that of modelling (*M),
which I introduced to the A team, and into their model,
above. I found myself focussing on the implied modelling
aspects of all the outdoor macrotasks and, if one extended
the meaning of modelling to mean rehearsals and testing
options, one could extend its role into all the
microtasks.

It was even possible to see modelling in all the stages
above from (1): build a model according to the criteria,
to presenting and communicating the plan in the eighth
stage, testing and confirming it in the ninth.

The B Team.

The team managed also to carry out the exercise aim in
their own way. Their final feedback came in the form of
an illustrative monologue presented with impressive
panache. The six areas of learning related to five phases
of problem-solving and one to the training aspect of
leadership.

The B team's five PS priorities were more descriptive than
prescriptive, continuing their consciously experiential
approach, seeing leadership/problem-solving training
scenarios as cold media (McLuhan, 1964) requiring high
completion or audience participation for effective
realisation.

1   Communication.

2   <u>Planning:</u>

    2.1   Identification of the leader.

    2.2   Aim - presented by the leader with

    information/status power.

    2.3   Resources - of team members.

    2.4   Open-mindedness, as opposed to the application

    of repertoire at random, or in role-support.

    2.5   Receptive.

    2.6   Flexible.

    2.7   Assumptions.

    2.8   Standard (shared) knowledge.

    2.9   Summary of <u>actual</u> plan.

3   <u>Preparation.</u>

    3.1   Very important.

    3.2   Rehearsals - dummy run.

    3.3   Skills learning for task.

    3.4   Obstacles/difficulties highlighted via 3.2.

4   <u>Action and Control.</u>

    4.1   Initially to maintain leader role.

    4.2   Leader maintains morale.

    4.3   Climate of urgency.

5   <u>Completion and review.</u>

This descriptive as opposed to prescriptive approach emphasised the qualities or ingredients of the problem-solver as opposed to the skills.

Their recommendations for developing the training aspect of leadership agreed with the A team on the need for access to a body of agreed "standard operating procedures" or skills, for handling problems and communicating with teams in terms of task aims.

Overall Conclusions:

1   Groups rapidly integrate and develop characteristic problem-handling processes and approaches. The failure to police the use of Keith Jackson's system early on in the course, allowed a Janis-like groupthink to evolve in both teams, which demonstrated that

2   Groups tend to deploy a collective repertoire of experienced "past" solutions, applying them very readily and thus leading to

3   A tendency to "interpret" the problem as one which they can storm with their collective repertoire, a tendency which is only abandoned when the attempt to "rush" the problem fails signally, leading to conditions where

4   System is ultimately deployed in the face of the group's inability to remould or recreate the problem into one which they <u>wish</u> to see, so that

5   A problem exists only when your repertoire has failed.

Points 1-5 suggest a temperamental tendency to "defocus",

to

6   Think with your hands instead of your head - the
preference for action as a means of dealing with the
ambiguity, anxiety and stress of quantifying the unknown
and having to think.   This point also has consequences for
the design of training problems.

The teams tended to look for the "trick" at the centre of
the problem, largely because such "tricks" had been at the
centre of training problems they had themselves
experienced.   During both the microtask and the macrotask
phases I continued to hear the question: "Does anyone
recognise this problem?"   This can lead to the
misidentification of a physical skill with a process-using
skill.   It was ironic that the A team consistently asked
the trick-design question and applied creative techniques
to underpin their dependence on producer/imitative (Holt,
1969) problem-solving behaviour on two macrotasks in a
row.

Subsequent to this exercise, it was interesting to read
Isenberg's (1986) review of the research into cognitive
aspects of managerial work, which focussed upon how
managers impose meaning on the stimuli that they
encounter.   Isenberg suggests that the interpretation of
data or events is not "intrinsic" to stimuli, but is
rather the result of managers fitting stimuli to their own
belief, biases and assumptions - a kind of pre-emptive
deja vu.

7   Another difficulty preventing individuals within a
team from consciously practising systematic problem-
solving processes lies in the medium of instruction. As
McLuhan said

> ".. the "message" of any medium or technology is the
> scale or pace or pattern that it introduces into
> human affairs.... "the medium is the message" because
> it is the medium that shapes and controls the scale
> and form of human association and action."

The teams resisted the message because they did not have
to change. Change was not on the official agenda for this
INSET course. Everyone was looking to come out of this
experience with values, myths and attitudes intact.

The irony of the situation lies in Keith Jackson's
medium of instruction not having been itself subjected to
any method of systematic problem-solving. Jackson fails
to consider the learning in terms of either Bruner's
growth or features of a theory of instruction (1960).

Keith Jackson's approach is limited, like de Bono's
in its "hands-off" approach, which allows an instructor to
travel light. It is not enough to have a message, you
need a medium which makes your message real, which
confirms and consistently exercises your message before
you allow your students to experiment, otherwise the
medium becomes its own massage.

The lesson for Keith Jackson came quite early. The
teams were beyond his control at the end of the microtask
phase. The symbolic refusal to use his terminology and

the group decision to pretend to be using his system during the confrontation on the bus, meant that he had failed to establish the system within the lives of the teams.

However, Keith did have the last laugh on the teams. Their resistance to employing his system led to their devising and amending via feedback, their own parallel, equivalent, systems approach.

I think the team learnt a lot more about team-building than systematic problem-solving, and I determined to continue with the attempt to design a learning medium which would reflect its message.

Postscript:

Despite the official success of the course the "idea" of introducing neutral, functional processes or systems for dealing with problems into the Army Education System did not take off.

I feel that this was due to three factors: Firstly, Susan Thomas's Guardian article (1984) covering this INSET, identified the "idea" too baldly as a conscious officially-sponsored reaction to certain unspecified leadership difficulties in the Falklands War.

Secondly, it suggested that if the idea was internalised by military leaders, they would inevitably become pacifists. This article effectively served to distance the military educational establishment, and to remove any official support we might have enjoyed.

Finally, a combination of the "not invented here"
(N.I.H.) syndrome, and the "halo" effect was in operation.
Whereas Peter Lewis and I recognised Professor Keith
Jackson's academic "rank", the title of professor was seen
as coming from a context too remote to be taken seriously,
viewed like Dr. Glendening-Rees the eminent expert in
dietetics in Waugh's "Officers and Gentlemen" (1955), by
the pace-setters of incremental change, the teeth-arms
directors. Directors who determined the continued
existence of the Royal Army Educational Corps, at a time
of "civilianisation" and reductions in uniformed support
services, on the basis of their accepting a purely
instrumental role in advising on training development.

Chapter Five: The Medium is the Message.

The purpose of this chapter is to introduce the working

microtask skills teaching system (civilian and military),

some related macrotask aspects, and to discuss

developments and elements of the system without

necessarily making any comparisons with other working

systems.

Microtasks will normally be dealt with in summary and not

in detail.

The microtask skills teaching system is a preparatory

phase, lasting 20 periods over three days (timetable,

Annex D), preceding and developing the student's readiness

for the full-scale, outdoor macrotask phase.

The Working Philosophy: A Student's Orientation.

At the beginning of a Task-Oriented Group, Problem-

Solving Project (TOGPSP) course, students are introduced

to the instructor and given a preliminary "modus operandi"

orientation to the subject which includes some

illustrations and restrictions.

These illustrations vary with instructor and audience,

involving topical anecdotes or edited video extracts

emphasising the importance of applying skills in order to

establish control of situations.

Students are told that in the training they are about

to experience they will learn in teams, some simple

methods of problem-solving and then apply them.

A warning is given about the deliberate artificiality

and progressive difficulty of the problems; that there is a latent danger within "realistic" (context-tied) problems of tending to learn the problem, and not the method of solving it:

> "The problems themselves don't matter - how you deal with them does."

The gradual complexity and difficulty of the problems will make the student familiar with an initial impression of helplessness at the microtask's apparent impossibility, a feeling which will be dispelled through increasing familiarity with the application of the methods taught, and their success on preceding problems.

The two basic TOGPSP techniques are listed:

> Systematic Problem-Solving (SPS).

> Systematic Task-Presenting (STP).

- the focussing skills of listening attentively, and speaking with precision will also develop along with SPS and STP.

This orientation includes an outline of how the sessions should be handled by students:

1   Everything you learn, you will need.

2   You will train in small teams of 3 people (triads).

3   When a task is presented to the team - you will record all the work that led to your solution in your working diary.

> The reason for this is two-fold: firstly, so that you

are not tempted to have a team consisting of a "scribe"
who does all the work, and two team-members who just throw
ideas at each other! Secondly, you will all need to refer
to your working-diary at the end of the phase in order to
give sensible feedback on your progress.

4   After each problem, record your view of what you have
learnt under the heading "Lessons Learnt". Individuals
from the triads will be asked to read out their "Lessons
Learnt" - don't worry about this, there are no definitive
"right or wrong" answers.

5   Everyone will have the opportunity to act as

    a) leader - of the triad, or larger team.

    b) observer of other teams, or

    c) spokesman summarising the "Lessons Learnt" from

    your triad, reporting to the whole group within the

    classroom.

Finally,

6   Do nothing which is of no use.

7   Time is very short, don't waste it.

8   Don't be afraid to offer your own ideas to the team or
the instructor - they will be appreciated.

At this point, some preliminary administration is carried
out after the orientation phase: classes are set up
(minimum class-size is twelve, maximum is eighteen),
triads are detailed (usually at random or by alphabetical
listing or even height!) and allocated to areas or desks
within the classroom.

Notebooks for use as working diaries (WDs), blank vufoils, coloured overhead projection pens (OHPPs), and sheets of graph paper are issued; followed by a quick introduction on use of the overhead projector (OHP).

Learning objectives and cumulative feedback are presented and confirmed via vufoils. Microtasks are read out in the form of a microtask script detailing the problem, the limitations, the task equipment, the priority in terms of the technique of SPS to be applied, and reporting deadlines for the triads. The instructor confirms all the details of the microtask, then issues the microtask equipment to the triads.

In the next three objectives, students are introduced to the theoretical basis of the approach.

Objective 1: Introduction to TOGPSP.

The TOGPSP aim is stated:

> "To train students in basic procedures enabling them
> to lead and maintain a small group in the achievement
> of a task."

These limitations are emphasised. There are no pretensions to world-domination, developing corporate strategy or solving international or social problems; the aim is strictly rooted within the designed practical context of an individual within a task or role-culture (Harrison, 1972), given a delegated task with few

resources apart from manpower and a little time.

The TOGPSP aim is based within a "tactical" as
opposed to "strategic" context. I use "tactical" as
derived from its original military context as the art of
manoeuvering troops whilst in contact with the enemy, with
the problems of this delegated task taking the place of
the enemy to be dealt with by the team and its leader. I
consider the "strategic" concept in terms of the command
of an army in a campaign, where a general may interpret
the tasks and their operational theatres, and even whether
to act at all. I would consider lateral thinking or
synectics as examples of "strategic" thinking.

The TOGPSP context assumes that the task is strongly
related to the purpose of the organisation within its
conventional environment, and that its success criteria
are unambiguous and practically defined by a superior. In
other words, to paraphrase Jackson (1975), there is an
objective, there is an obstacle, and so there is a
problem.

The working TOGPSP theory is presented initially in terms
of three words: skill, practice and feedback. The
relationship of these words is developed simplistically in
three qualifying statements and a diagram:

A.   Leadership is a <u>skill</u> (identify the processes
      involved).

B.   Lack of <u>practice</u>, means mistakes (practice micro and
      macrotasks demonstrating and employing these

processes) .

C.   By systematic <u>feedback</u>, we can improve our skill

(consistent, open, cyclical skill-based feedback by

everyone involved).


```
                 Skill
                 //  V   (followed by.. )
                //     V
  (reinforces) //        V
              //          V
             //            V
         Feedback <---- Practice
```
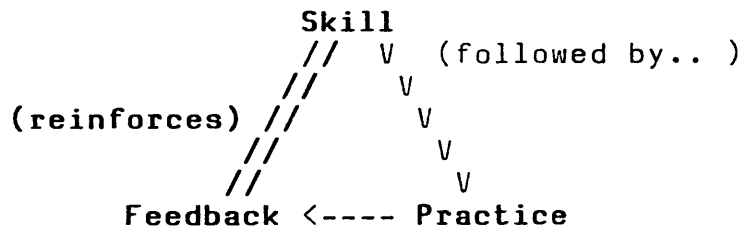
At this point the instructor does two things:

1   Issues the TOGPSP macrotask proforma (see pages

5.7-8), and using a vufoil, explains the criteria, stage

by stage. This proforma is an operational check-list for

an observer assessing the student's use of the basic

procedures mentioned in the aim, and lists all the SPS and

STP stages.

2   Explains how the microtasks will teach the skills,

and the macrotasks will confirm them through practice.

In other words, you will get fed a "chunk" of workable

process skills, exercise different aspects of these

skills, receive and give feedback on the "chunk", then

receive yet another "chunk" of process acquiring a

cumulative process, stage by stage.

The point is, that the micro and the macrotasks are the

"meat" of the process, the process skills are the blades

or tools which, if used properly, give us access to what

I. PRE - TP (TASK PRESENTATION) DS CHECKLIST
Has the TL -

1.1 Completed a AFCOP on the TASK?
1.2 At least 2 x CO in the AFCOP?
1.3 Made a model?
1.4 Produced a PLAN GRID in Action.
1.5 Covered all 5 TFALR headings?

If all OK, let TL begin ....

II. TP

2.1 Numbered off the team?
2.2 Explained the model?
    Methodically used
2.3 T = Target
2.4 F = Factors - Team
             - Model
             - Scenario
2.5 A = Action - Outline
              - Plan Grid
              - Routine
              - Communication
2.6 L = Logistics
2.7 R = Review

INDIVIDUAL STUDENT EXERCISE REPORT
PERFORMANCE MATRIXGRADE

A - 1	B - 1	C - 1	D - 1
A - 2	B - 2	C - 2	D - 2
A - 3	B - 3	C - 3	D - 3
A - 4	B - 4	C - 4	D - 4

1ST/2ND Task (if 2nd attach previous, as well)
- Confirmed, by testing individuals knowledge?
- Rehearsed the task
  - on the model
  - on the ground
- Ask the team for questions?
2.8 Remain in control of the TP?

III. ACTION - CONTROL
3.1 Locate self centrally?
3.2 Everyone know where Leader was?
3.3 Physically involved in the task, instead of controlling the team?
3.4 Respond to new factors in the situation?
3.5 Lose control?
3.6 2/3IC supported leader?
3.7 Considered TIME?

Directing Staff ....

IV. DEBRIEF BY DS TO:
    - Team Leader

4.1 Did anything go wrong? (Run through the task)
4.2 If you were to do this task again what changes would you make?
    - Team
4.3 Could you foresee any of the task problems in advance?
4.4 Did you try to help the leader?
    - Finally, Team Leader
4.5 Have you learnt anything from this task?
    - Finally, Team
4.6 Have you learnt anything?

As DS, list lessons learnt on back of Feedback Sheet

(i) ORGANISATION

(ii) COMMAND

(iii) WORK WITHIN TEAM (when not a leader)

Notes:
(a) I, II based on FEEDBACK PROFORMA and 'Sources of a Leaders Power' - TOGPSP Handbook
(b) In I, II, III - one-word comments are not enough
(c) Number system in performance matrix grade (after A, B, C) indicates positive contribution as team member 1 - good, 2 - fair, 3 - weak, 4 - negligi
(d) Grades: D - Student received instruction in Exercise TL objectives, and attended EX. C - As D, plus successful TP.
        B - As C, plus demonstrated basic control of group to achieve Task
        A - As B, plus demonstrated ability to a) foresee problems b) team-build/motivate

I. **PRE - 'O' GROUP - DS CHECKLIST**
   Has the TL -

1.1 Completed a AFCOP on the TASK?
1.2 At least 2 x CO in the AFCOP?
1.3 Made a model?
1.4 Produced a PLAN GRID in DETAILED TASKS?
1.5 Covered all 6 x GSMESC headings?
If all OK, let TL begin ....

II. **0-Group**

2.1 Numbered off the team?
2.2 Explained the model?
    Methodically used
2.3 G - Ground
2.4 S - Situation
2.5 M - Mission
2.6 E - Execution
2.7 General Outline
2.8 Detailed Tasks (Plan Grid)
2.9 SS - Service Support
2.10 CS - Command and Signals

**INDIVIDUAL STUDENT EXERCISE REPORT
PERFORMANCE MATRIXGRADE**

A - 1	B - 1	C - 1	D - 1
A - 2	B - 2	C - 2	D - 2
A - 3	B - 3	C - 3	D - 3
A - 4	B - 4	C - 4	D - 4

NB: Stick to the grade
    definition - don't
    interprete.

1ST/2ND Task (if 2nd attach previous, as well)

2.11 Confirmed, testing individuals knowledge?
2.12 Rehearsed the task
     - on the model
     - on the ground
2.13 Ask the team for questions?
2.14 Remain in control of the 'O' Group?

III. **ACTION - CONTROL**

3.1 Locate self centrally?
3.2 Everyone know where Leader was?
3.3 Kept physically detached from the task
    action (ie told team what to do, didn't
    do it himself)
3.4 Respond to new factors in the situation?
3.5 Lose control?
3.6 2/3IC supported leader?
3.7 Considered TIME?

IV. **DEBRIEF BY DS - USE THESE QUESTIONS TO HI
THE LEADER AND THE TEAM TO MAKE THE POINTS.
DON'T DO ALL THE TALKING.**
- Team Leader
4.1 To what extent was the task successful?
    _% (0%, 10%, 60%, 100%)
4.2 Did anything go wrong? (run through the
task?)
4.3 If you were to do this task again, what
changes would you make?
- Team
4.4 Did the 'O' Gp prepare you adequately fu
the task?
    - was the model accurate?
    - how good was the PG?
4.5 Did you try to help the leader?
- Finally, Team Leader
4.6 What have you learnt from this task?
- Finally, Team
4.7 What you learnt?

(i) ORGANISATION	(ii) COMMAND (includes % estimate of task success)
(iii) WORK WITHIN TEAM (when not a leader)	(iv) LESSONS LEARNT

Notes: (a) I, II based on FEEDBACK PROFORMA and 'Sources of a Leaders Power' - TOGPSP/CORDSKI Handbook

(b) In i, ii, iii, iv, one-word comments are not enough

(c) Number system in performance matrix grade (after A, B, C) indicates positive contribution as team member 1 - good, 2 - fair, 3 - weak, 4 - negligible

(d) Grades: D - Student received instruction in Exercise objectives, and attended EX. C - As D, plus successful O-Group
    B - As C, plus demonstrated basic control of group to achieve Task
    A - As B, plus demonstrated ability to a) foresee problems b) team-build/motivate

we need. Sometimes as a physical, illustrative TOGPSP

skills metaphor I use a credit card-sized survival tool.

This tool has the following relatively functional (due to

size) features:

1   cutting blade

2   bottle opener

3   screwdriver (two sizes)

4   tin-opener

5   file

6   spanner (four sizes)

7   compass

The point of the illustration is to suggest that the

survival tool is a kind of metaphor for the TOGPSP tools

without its performance limitations of scale: you won't

necessarily use these options or process-skills all the

time, but after completing the training, you will be

experienced enough to match the problem situation to the

process-skill.

Depending on the group, he may (if he thinks it useful),

read out the modified (1984) micro/macrotask definitions:

"There is clearly a need for a training medium which does

what we want it to do. This is the motive behind the

development of micro and macrotasks (Mits and Mats).

For TOGPSP purposes Mits and Mats are unambiguous limited

tasks purposively designed to teach. They work by

presenting a problem to a team or individual, this leads

to activity which in turn is analysed in terms of

systematic problem solving.

A Mit (Microtask)

1   Teaches by confirming the usefulness of the elements
    of the PS process taught immediately prior to its
    being presented.

2   They are designed to help individuals break into the
    success cycle of PS (i.e. Harlow's (1949) research
    findings suggesting that successful PS is a product
    of an established track-record of successful past
    PS.)

3   Gradually the student takes on board the PS system
    through structuring the microtask correctly, and
    learns the utility of the TOGPSP material.

4   The mit can be a physically reduced mat, or even a
    two-dimensional model of a real situation.

A Mat (Macrotask).

1   Is a real-time problem requiring the deployment of
    the leader's complete SPS and STP approach.

2   It will not be designed with hidden criteria or
    values, or based upon knowledge of a particular
    physical trick.

3   A mat is a means to an end. That end is one of
    systematic PS and TP.

4   A mat will only be offered to an individual - not
    offered to the team since that team is unlikely to
    operate together in a real problem environment
    (unless we are team-building), and the individual's
    opportunity to operate independently is too

precious."

Objective 2: The Success Formula.

This objective discusses the practical context, motivation

and styling of problem-solving activities.

A simple non-mathematical "equation" is presented:

$$\frac{\textbf{Task}}{\textbf{Teamwork}} = \textbf{Success.}$$

Triads are asked to consider the implied relationship

between the elements of the equation. If this seems

difficult, teams are asked to produce working definitions

of the elements, such as:

Task = Your team's objective.

Success = Completed task.

Teamwork = Everyone working together.

At this point, the lesson is clear: by sharing the task

through teamwork, we can be successful.

The "success equation" is followed by three further dicta:

1   Teams exist to accomplish tasks. If they are not

successful, they tend to disintegrate.

2   Teams need to succeed in their tasks. This success

is a product of teamwork.

3   To achieve this teamwork consistently, we must

develop problem-solving skills. Consistent teamwork

needs planning.

The teamwork motivation for problem-solving is

established, and the task-oriented social aspects of

teams, has been hinted at.

I now introduce a cautionary warning to potential problem-

solvers in terms of PS tendencies and discuss an ideal

problem-solver's characteristic approach:

There are three basic types of problem-solvers:

1. ROBOT: He does the same thing he did last time, or

something that worked somewhere else.   Tends to see what

he wants to see.

2. KAMIKAZE: He jumps into the problem, hopes that his

enthusiasm and energy will save him.

3. SYSTEMATIC: He examines the problem intelligently;

develops several alternatives, tries them out, and selects

the best.   He listens and focusses his attention, in

other words - thinks systematically - thinks AFCOP.

I usually illustrate the usefulness of robot aspect by

asking the audience how many of them can remember the

"Green Cross Code"?, after a little prompting most people

can remember the drill for crossing a road, and we often

end with singing it out in sequence.   I point out that

this example of a useful, simple, life-saving drill (and

others) means that we don't have to consider the reality

of "roadness", we recognise basic cues in the situation,

we've crossed roads before, we apply the drill, and we

live to walk another day - unless we're in a country where

they drive on the right-hand side of the road!

(After mentioning AFCOP as a corollary, I am swamped with cries of "what's this AFCOP business?" The next learning objective explains this mnemonic acronym.)

Objective 3: The Problem-Solving Process.

So far we have been setting the scene. Now the first part of SPS is introduced to answer the previous question and develop the ideal of the systematic problem-solver.

Students are told that there are 3 steps to a plan (see next page): "Just ask yourself 3 questions, in this order:

1	AIM	"What am I trying to do?"
2	FACTORS	"What will help or hinder me?"
3	COURSES OPEN	"How many different methods can I think up, - which is the best?"
4	PLAN	The best method.

By this time the significance of the mnemonic acronym AFCOP has become clearer.

If necessary, if there is time and it makes sense, I may discuss historical examples of the results of functional fixedness (Bruner, 1964) or the "robot" in control of strategy. This may be topical or include: the bombing campaign against Germany in the Second World War, linear infantry tactics in the First World War, British Army intervention in Northern Ireland in 1969, the Argentine Junta's view of the planned withdrawal of HMS Endurance from the South Atlantic in 1982, aspects of the Miners' strike, results of agricultural collectivisation in the

OBJECTIVE 3:   PROBLEM-SOLVING PROCESS (AFCOP)

3.0   There are 3 steps to a PLAN

3.1   Ask yourself 3 questions:

TOGNOT

△   Aim - What am I trying to do?

Factors - What will help (+) or hinder me (-)?

≡   Courses Open - How many different methods can I think of and <u>which</u> is the best?

Plan - the best method

3.2   Arrange your AFCOP like this:

←——— LEFT ½ OF PAGE

△

——————→
RIGHT ½ OF PAGE

	1	2	3	4
+ (Positive factors)				
1.	X		X	
2.	X	X	X	X
3.			X	
- (Negative)				
1.		X	X	
2.	X		X	
3.		X		
? (can't classify)				
1.			X	X
2.				
3.	X		X	
FACTORS				

3.3   List all the relevant FACTORS within the problem down the left hand side of the page, under AIM.   Draw vertical columns to the right hand side of your list of factors - these will be your COURSES OPEN.   Then working down the factors, try out some simple, random combinations.

3.4   This is a means of physically modelling the factors in your problem.

Soviet Union and communist countries in the third world,

the politics of aid. Topics similar to Janis's

illustrations are fun for most intelligent audiences

although one begins to suspect that Janis' examples are

chosen because of conspicuous "groupthink" failure and

that in real life, policy failure may be a product of

having to react with insufficient information on a

situation.

Such illustrations are best saved up for discussion

in a more relaxed evening session, and must not be allowed

to divert students from estabishing AFCOP.

I usually introduce the idea of Systematic Problem-Solving

(SPS) notation (TOGNOT) in the form of a printed AFCOP

format sheet (see reduced example below).

AFCOP Format Sheet.

Tactical Problem-Solving (TPS)

developing the Courses Open, the other is choosing the

most appropriate to develop into a working Plan.

The Courses Open symbol is placed in two locations on

the page: firstly, to the right of the Factors symbol in

the middle of the page and has 3 numbered vertical columns

(to encourage the student to develop at least 3 courses

open). The second location of the Courses Open symbol is

above three numbered boxes across the bottom of the format

sheet.

Where a factor from a category-grouping is necessary

to particular Course Open, you look across from the

vertical listing on the left, below the Factors symbol to

the vertical column of the numbered Course Open on the

right, and at the point of incidence, put a cross.(see

example: Objective 3).

An outline of each of the Courses Open is written in the

numbered boxes below the Courses Open symbol at the bottom

of the page.

A blank AFCOP format sheet is issued to each student, and

a large file of blanks format sheets is made available.

The characteristic AFCOP procedure is carried out:

1   State the Aim.

2   Create a Factors "shopping-list".

If you are going to compile a monthly shopping-list, you

would probably do it in two stages: randomly and then

in terms of a useful category. In other words, you would

list everything needed in terms of meals (ingredients),

The AFCOP format sheet is designed to help the student deal with the 3 developmental stages that lead to the plan in the correct sequence, enforcing a didactic procedure or drill for beginning the SPS process.

The TOGNOT appropriate to each stage is laid out as follows:

Stage 1

AIM:

A triangle in the top left-hand corner of the format sheet.

Stage 2

FACTORS:

A circle (representing a world of possible factors) with a plus, minus and a question-mark within it to suggest the basic categories of usefulness, positioned below the triangle.

Factors are listed vertically below the symbol in category-clusters of positive (+), negative(-) and questionable or difficult to classify factors (?).

Stage 3

COURSES OPEN:

Four parallel, horizontal lines to suggest -

a) parallel options moving in the same direction to achieve the aim, and

b) the need to select one of the lines of possible action.

In other words there are 2 sub-processes here, one is

then redraw the list in terms of the way the supermarket

organises its display.

Firstly, list all the factors that could possibly affect

your achieving the aim statement, and secondly categorise

these factors into groups using your AFCOP format sheet

down the left-hand side of the sheet.

- The point needs to be made that there are no right or

wrong listings or groupings of factors, the priority is to

concentrate on making sure that you do have all the

important factors.

3   Draw vertical columns to the right-hand side of your

Factors "shopping-list" to log the Factor-combinations in

your Courses Open with crosses or category symbols.

It can sometimes pay to develop Courses Open through

random combinations of factors.

Finally, make the Courses Open symbol at the bottom of the

page or on another sheet if necessary, and explain fully

each alternative Course Open or method of solving the

problem.

This is a means of physically modelling the factors within

the problem.

If you fail to LIST, CATEGORIZE and MODEL the factors, you

cannot plan realistically.

4   Select the best method out of the Courses Open you

have devised.

The point is made that if you scan the Courses Open

combinations of factors, a visual indicator of a simple

plan is that it involves the least combination of Factors,

and of a safe, predictable plan that it has the most

positive factors.

An Alternative Factors "Accounting" Method.

A recent variation in linking appropriate random

shopping-lists factors to Courses Open, in order to select

the most positive Course Open, has been to leave the list

of factors as a random list and to put an appropriate

symbol at the point of incidence.

This came about as several adult management courses wanted

an "objective" way of quantifying the relative risk or

positive weighting of each Course Open (see example; Mit

1: The Message, next page).

The subject of functional fixedness is developed a little

further here to emphasise the importance of developing

more than one course of action; so that at least an

alternative contingency is available, and so problem-

owners can recognise strategies which are proving too

expensive. (Gallipoli campaign, Nimrod AEW project, US

campaign in Vietnam, Trident ?)

The warning is given "Remember, your first idea may be

your last!" The "gut" feeling for resolving problems can

be expensive, you can invest everything in your first

idea, over-identifying yourself with developing the one

plan as a means of reducing the ambiguity, uncertainty and

stress involved in waiting for a solution to emerge when

MIT IS THE MESSAGE.

AFCOP Format Sheet.

MESSAGE TO B, RESPOND IN 20 SECONDS

	1	2	3	4	5
+ PLASTICENE (WEIGHT)	?	?	+	+	+
+ PENCIL	+	+	+	+	-
B CAN MOVE, WHILST IN CONTACT WITH CHAIR.	+	+	+	+	+
PAPER (A4-SHEET)	+	+	+	+	-
NO PRE-BRIEFING (B BY A)	-	-	-	-	-
RUBBER TUBE	?	+	?	-	-
DISTANCES : CHAIRS/SCREEN.	-	-	+	+	+
SCREEN : HEIGHT, LOWER GAP, WIDTH, STABILITY	-	-	+	+	+
CEILING	?	?	+	+	?
WALLS : EITHER SIDE, BEYOND B	+	+	+	+	?
20 SECONDS TIME LIMIT	-	-	-	-	+
SILENCE — NO SOUND SIGNALS.	-	-	-	-	+
(+)	4	5	7	8	6

1 MESSAGE ON PAPER, ROLLED UNDER SCREEN.	5. AS THROW PLASTICENE AT SCREEN, KNOCK IT OVER, ASSUME MESSAGE POSITION.
2 AS ①, BUT SECURED IN TUBE BY PENCIL.	
3 PAPER AEROPLANE (PRE-FOLDED), PLASTICENE AS NOSE-WEIGHT (TO GUIDE)	
4 AS ① BUT WRAPPED AROUND PLASTICENE BALL,	Tactical Problem-Solving (TPS)

time could be spent on researching and reframing the
problem and other viable options. The "gut" feeling
frames its plans in terms of a repertoire which enhances
roles - you do what you want to do, irrespective of the
problem.

Aim -> Plan

(- consideration of the Aim, followed immediately by
a Plan).

The "gut" feeling is a dangerous combination of both robot
and kamikaze tendencies. It is the recognition of this
combination that made me realise that systematic, robot
and kamikaze were not dichotomous, nor occupying positions
on a continuum, but that we have different proportions of
all three in our characteristic approaches under different
circumstances.

AFCOP is a simple tool, a procedure for suspending
judgement until you are in a position to plan and make
realistic decisions.
There is an almost pathological (from a researcher's point
of view) problem-solving tendency or reflex which I have
noted since 1983, in all problem-solving situations within
INSETs, and in professional civilian management training
sessions, which can only be dealt with by using AFCOP.
Unless the instructor is very careful, pedantic and
demonstrably open in his feedback, he can inadvertently
build this into his problem-solving system - this tendency

or reflex is a version of functional fixedness, its

brother: repertoire-search, the tendency to fit your

preferred role-supporting repertoire to the situation, a

variation on the robot tendency but slightly more

creative.

Perhaps the most interesting example of this tendency was

the West German terrorist grouping: the Baader-

Meinhoff/Rote Armee Front gangs, who mounted a terrorist

campaign against the West German establishment in order to

transform it from a materialistic, democratic culture into

a fascist state from which they could then deliver a

frightened and oppressed proletariat!

I first really took notice of the repertoire-search

reflex when my development of the microtask system, after

the 1984 INSET with Keith Jackson, led me into a greater

concentration upon the systematic use of PS processes.

I noticed a general and consistent tendency for

students to identify the aim of the microtask, then

immediately begin to list what were all their Courses Open

in the area of the AFCOP format sheet, designed to be

exclusively reserved for their Factors "shopping-list".

Aim -> Courses Open -> Plan.

(- where Courses Open are preferred ones extracted

from an existing repertoire, and not developed from a

realistic consideration of Factors, thus saving time

and fitting old convenient courses of action,

irrespective of the actual problem.)

The development of the "shopping-list" skill is the basis
of the AFCOP system, with it we can sometimes recognise
that the original aim does not match the factors of the
situation, which can in turn, lead us to reframe the
original aim.

Aim(1) -> Factors -> Aim(2)

or research the problem more deeply:

Aim -> Factors(1) -> Factors(2)

Since it is unlikely that we can hope to erase the
repertoire-search reflex because of its general usefulness
in everyday life, let's try to modify the repertoire that
it searches through and fits to situations, so that it
includes the procedures involved in SPS, beginning with
AFCOP.

Aim -> Factors -> Courses Open -> Plan.

Initial Microtasks:
After the initial 90-minute session introducing Objectives
1-3, the triads are presented with three microtasks (mits)
on which to practice their use of AFCOP (see timetable
example, Annex D).
Within the AFCOP the stated priority is to develop
alternative Courses Open, to develop confidence, a pride
in their ability to generate many more alternatives than

they thought possible initially, and via the triads, to
develop familiarity in using and hearing AFCOP sub-
processes articulated. All three mits look forward to
later learning objectives, in encouraging and developing
the importance of

1   Modelling, by drawings of the problem.

2   Experimentation, by physically playing about with the
     factors within a mit, and

3   Rehearsal.

All three involve a kind of "playing" with the problem
which helps to reduce functional fixedness by slowing down
the PS processes, and reducing tension and stress through
a kind of creative sublimation.

I would summarise the Lessons Learnt from the first three
mits, as follows:

Microtask:	Lessons Learnt:
1) The Message.	Usefulness of symbols notation to speed up communication.
2) Water Transfer.	Need for good skills and knowledge background to operate from.
3) Three Candles.	That the way we solve problems is dependent upon the form or means by which we receive the problem. (In other words, the structure of the information determines how it is handled.)
All 3 Microtasks:	The usefulness of the AFCOP format.

The characteristic structure of the microtask session is set in these initial mits:

1   Instructor reads out microtask script: this includes a statement of priorities within the SPS/STP processes, sets time-limits for reporting completion, pauses, answers student questions, issues mit problem equipment to each triad.

2   Triads work through processes, keeping an eye on reporting deadlines.

3   At appropriate times, Instructor announces deadlines and checks on the process-stages, using OHP, and calling for triad spokesmen to state their version: a composite answer is produced via the OHP, allowing those who misinterpreted in their approach, to correct it.

4   There is always an action phase to realise the Plan.

5   A feedback phase completes the microtask. This consists of 3 stages:

a) unstructured analysis by triads of each others performance in terms of mit criteria, followed up by b) a two-minute silence in which individual triad members list no more than six points on the subject of what they have learnt from the mit. c) If there is time, the triads develop a combined team version of Lessons Learnt and a delegate prepares a summative vufoil which he presents to the whole group. Otherwise, the instructor uses a blank vufoil and nominates individuals at random to list their points.

- everyone makes notes upon the Lessons Learnt, as well as

maintaining their process-copy in their working diary.

Objective 4: Models, Modelling and Tactical Thinking.

One of the major learning points from the KJ INSET in 1984

was the importance of modelling as a means of

developing, testing and confirming ideas. I prefer the

de Bono (1969) definition of model:

> "a method of transferring some relationship or
>
> process from its actual setting to a setting where it
>
> is more conveniently studied. In a model,
>
> relationships are preserved, though the things that
>
> are being related may be changed."

By modelling, I mean the process of developing or

constructing models.

Modelling is introduced as the logical next step following

on from AFCOP. By now AFCOP has led us to select a Course

Open as our preferred Plan, but we are still at the

beginning of our SPS and STP processes. We may have a

Plan but there are two topics we must consider:

> Checking - Is it workable? (and how can we check?)
>
> Communicating - Can you explain it to the team?

The usefulness of modelling can be demonstrated by its

versatility throughout all our SPS/STP processes, a model

of our problem allows us to

1   Solve problems:

If we build a working model of the problem, we can see how

big the problem is, and discover whether we know enough.

2   Plan:

Develop and "play" with all the different courses open to test their viability.

3   Explain:

The model of the problem area is a useful focussing tool in explaining the plan to a team. It allows us to directly present and explain the plan.

4   Confirm:

At some stage, a leader's words can get in the way. Team members may say what they imagine the leader wants them to say in order to reduce the stress of having to confirm things which they have only just learnt. The leader can step back by allowing team-members to demonstrate their understanding of relationships, action sequences and priorities on the model.

This can resolve ambiguities and identify bad sequencing, through focussing the whole team's attention upon the designed action sequence within the plan.

At this point, we add another level to the AFCOP:

"Modelling the problem will help you to develop
Tactical Thinking (TT)."

Tactical Thinking was developed as a corollary of modelling the problem, filling a perceived gap between the Plan as a product of AFCOP and the later Plan-Grid (PG) or plan-matrix for visually "logging" the Plan.

Tactical Thinking means looking at your Plan and doing

three important things:

1   Identifying all the problems you face.

2   Ordering these problems into a sequence of action-
     phases in order of priority - which allows you to
     solve them economically.

3   Allocating time and other resources to the action-
     phases.

Identifying the sub-problems involves initially just

listing them, then reorganising the list into new

categories: what must come first, what can come last? The

product is a list of phases, with different sub-problems

being solved in each phase just as in Davis's (1965)

system of Programme Evaluation and Review Technique

(PERT), which states what goes on, and in what order. The

allocation of time to the phases usually runs backward to

the present, and once time and resources are allocated, a

rehearsal of the phases with deadlines and standards

becomes possible.

    The "tactical" derivation in Tactical Thinking goes

back to the original military environment where tactical

training is the rehearsal of military battle drills under

simulated combat environment. As in my civilian

derivation, it involves an analysis of priorities.

The point is made that there is no viable substitute for a

personal reconnaissance in constructing a model of a

problem.

Two types of model are discussed:

1   "Survival" working model:

Simply use whatever comes to hand, in the outdoors: an

open stretch of mud, earth or sand. Use stones, pine-

cones, rubbish, twigs to indicate features.

2   Basic All-terrain model:

Cut an opaque white plastic carrier-bag down both vertical

seams, collect at least 4 OHP pens of either type

(permanent for the outdoors, and washable for the

indoors); and a 35mm film canister containing 6

draughtsman's drawing-pins and acting as an indicator of

scale, rubber bands and 6 differently coloured snakes-and-

ladders counters to represent team-members. The method is

simply to draw features onto the white plastic sheet. The

advantage is that the system is simple, and easy to carry.

It is necessary to establish useful model criteria and

Standard Operating Procedures (SOPs) for explaining the

model to a team.

Before constructing a model to solve a problem (SPS),

or presenting a model to a team to explain a plan of

action STP), the following drills and criteria apply:

1   Always set your model to the ground, and show:

      1.1 Your present location.

      1.2 North

      1.3 Scale

      1.4 Access routes

      1.5 Essential elements such as landmarks or useful

            orienting cues or features, special locations.

2   When you explain the model, confirm that the team

       can:

       2.1   Understand the model (in other words, can tell

             you what each element represents).

       2.2   Can "place" or orientate themselves and other

             people within the model, and explain their part

             in the model phase by phase.

Modelling the problem - building a working model of the

problem, is an auxiliary to AFCOP's development of

alternatives, testing them, and then analysis of the

chosen plan into time and priority phases via Tactical

Thinking.

Microtask 4: 2 Vertical Ropes From A Ceiling.
I developed this problem from the Maier (1931) pendulum

"cues" experiment described in Mayer (1977). The priority

in this mit is two-fold:

1. Clear briefing of delegates by triads, and vice-versa.

2. Construction of working models to solve a problem.

In mit 4 (see diagram, next page), the problem is to tie

two ropes together which hang vertically from a horizontal

rope connecting two diagonally-opposite corners of an open

quadrangle, four metres above ground-level. One rope is

longer than the other and leaves one metre of slack rope

on the ground of the quadrangle. The short rope ends one

metre above the ground. Both ropes are four metres apart,

and two metres away from each nearest diagonal corner.

*THIS DIAGRAM IS NOT TO BE SHOWN TO STUDENTS BEFORE OR DURING THE TASK.

1M from corner

2M from corner

2M from wall

2M from wall

4M apart

4M

end of rope, 1M from floor

1M of slack rope on floor

4' length of wood

5L container full of water
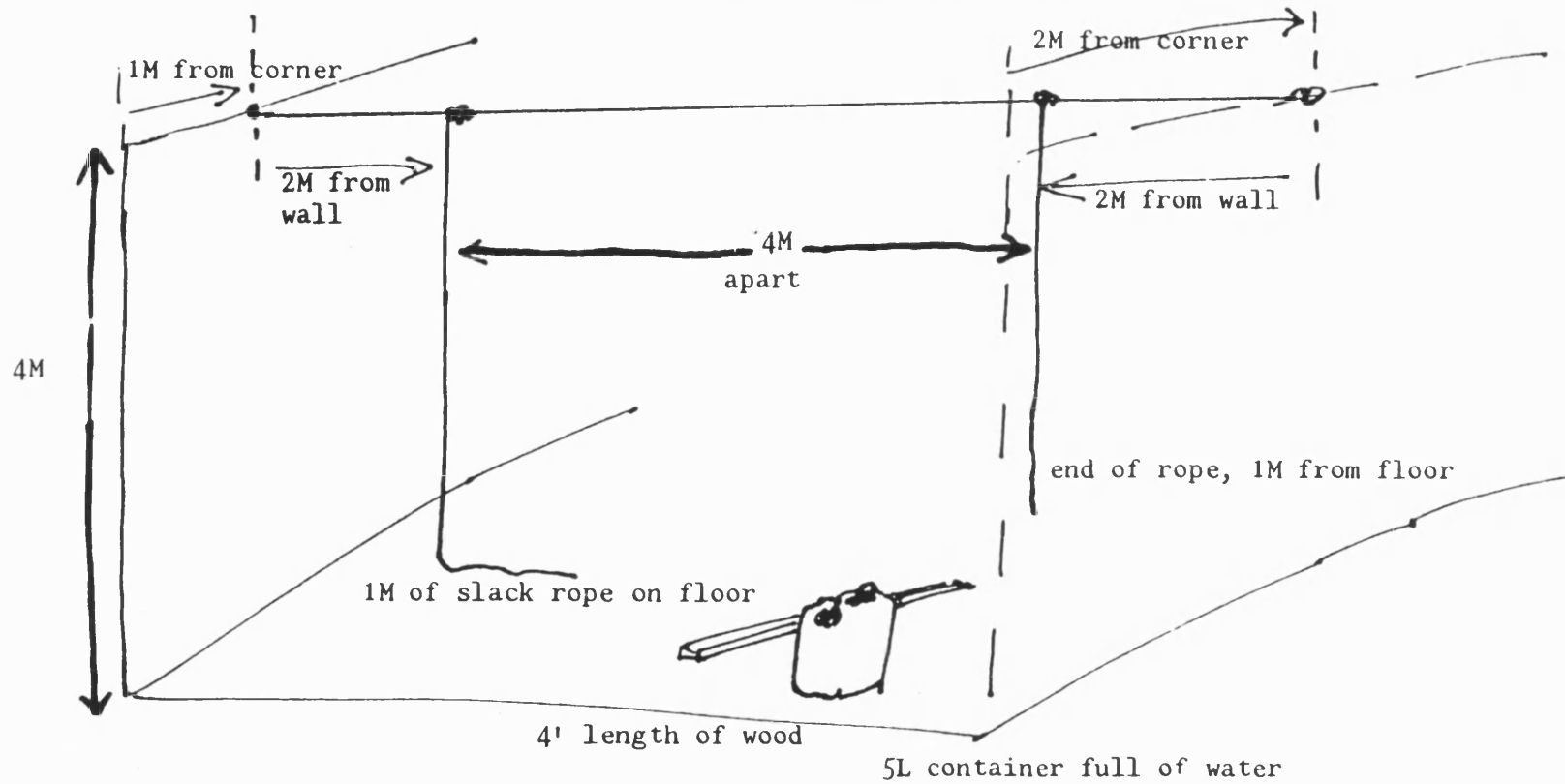
n.b.: Overhead rope will not support body weight.

Knots connecting both ropes to overhead horizontal rope are immovable.

The points of suspension on the horizontal rope are immovable, the horizontal rope will not support a student's body weight, nor may it be dismantled, or lowered.

Within the quadrangle there is a wooden stick, four feet in length plus a plastic five-litre bleach container full of water, with an integral handle.

Each triad within the classroom is provided with a model-kit of plasticene, rulers, string and pencils.

The problem-script is in two phases:

Phase 1 - As read to triad teams prior to selection of delegates:

1.1   This problem can only be seen, investigated and completed by one of your team, who will report to you and revisit the problem as often as you like. No-one else can leave this room.

1.2   Select your delegates, now.

1.3   Prepare your delegates now, keeping in mind the points made in objective 4 about the use of models to solve problems, so that the team will be able to build an accurate model of the problem, and use this model to solve the problem. Consider especially the criteria for a good model.

(The delegates are briefed within their triad then the instructor takes them to the problem area.)

Phase 2 - As read to delegates within the exercise area.

2.1 I will now explain the problem. Remember that you

delegates are the only ones allowed to actually see the problem and to later on try out the solutions organised by your teams.

2.2   Take note of the layout, the restrictions and the kit involved.

2.3   You must tie the long and short ropes together, but the restriction is that you cannot hold either rope and move from that standing position whilst in contact with the rope.

You may not use any intermediate object such as the stick or the 5-litre container to allow you to move with the rope.

2.4   The horizontal rope will not support your weight, and the knots connecting both the long and short ropes are immobile.

The instructor then handles the triads in five distinct phases of activity:

>   (The excerpts included here, are from a Junior Leader
>   session in the summer of 1985, taken by Captain Nigel
>   Cartwright RAEC :NC).

1   Triads are given 15 minutes to complete their AFCOPs, and build a working model.

2   Instructor invites Delegates to stand up and detail their triad's AFCOP using their model to demonstrate their Courses Open. The instructor records a summative AFCOP, collecting a list of all the Courses Open which is then reviewed by all the triads.

J1 (delegate): "If it was taut, was knocking it out and
then holding it there, putting it against the wall so
that the Jerry-can was held there, walk round then
tie it there."

NC: "How would you swing that rope though?"

J1: "Well that should be near enough, I think."

NC: "Will it?"

J1: "Well it will when we swing that (indicates short
rope), anyway.

NC: "How can we find out whether that would be? Do you
know how long this rope is? You don't? Do you know
what the distance between the ropes is? Do you know
how long this rope is? (indicates long rope with
jerry-can on end, pushed away from model wall with
ruler representing the stick).
So how do you know this is a scale model?"

All: (embarassed sighs and smiles...)

J2: "How do you measure it?"

J1: "Well roughly.. "

J2: "I mean they're not both the same length are they?"
(indicates long and short ropes on model).

NC: "You've got a 4 foot plank there."

J2: "Is it 4 foot?" (to J1)

NC: "About that... there you are (hints at solution by
picking up 3 rulers, joins them with both fists into
a yard length), there you are,one yard..

J2: (Takes the three rulers from NC and exits to

quadrangle).

3   Instructor issues sheets of graph-paper. The teams
review the Tactical Thinking concept, and are asked to
produce a bird's eye view of the problem being solved by
their delegate, with numbered arrows showing each movement
from the moment he comes through the door into the
quadrangle.

Triads trace their movement chart onto a blank
vufoil. Delegates present their plan to the group, using
their vufoil, dealing with critics from rival triads.

4   Best or most controversial plans carried out by
delegates, watched and reviewed by triads over close-
circuit TV.

5   Feedback organised by Instructor in terms of Lessons
Learnt, and the background story of Maier's experiment is
told, where in one experiment subjects were about to give
up when the experimenter entered the room and
"accidentally" put one of the ropes into motion as he
passed it. Subsequently, the subjects produced the
correct solution. Many of these subjects commented upon
the suddenness with which the problem situation became
reorganised, especially when one considers the lack of
awareness by the subjects of the experimenter's "hint".
This suggests that problem-solving may be affected by
factors that escape our conscious deliberations.

NC: "Team 4, you failed as well, why do you think you
       failed?"

J9:   ".. The delegate."

J7:   " - not good enough information."

J8:   ".. not good enough briefing."

J9:   "He didn't give us enough information.."

NC: " - to solve the problem."

J9:   ".. and the model was inaccurate, he, all the ropes
      weren't to scale, the same distance apart, we didn't
      really think it out properly either."

NC: "You didn't tactically think?"

J9:   "We didn't think tactically, no.. "

NC: "Right, so if you were going to do it again, how
      would you do it this time?"

J9:   "Well, get him to go out there, take down plenty of
      notes, ,measure things up, make a diagram of it and
      give us a fuller briefing in a proper, good sequence
      - then set about making a model, making sure it's to
      scale and then try out all different plans on the
      model, make sure they work."

In terms of Lessons Learnt, the main points of the
previous learning objective have been developed: that
models are part of our SPS/STP processes:

      1. Solving problems.

      2. Planning.

      3. Explaining.

      4. Confirming.

The microtask also looks forward to Systematic, structured
Task-Presenting as an integral factor in determining our
success as problem-solvers, since most of the confusion in

5.37

unsuccessful triads was due to fragmented, unstructured communication from the delegates back to the triads.

An interesting illustration of the use of models to solve ecological problems is the Horizon/BBC2 (1986) account of Dr. Glyn Vale's development of Tsetse Fly Technology in Zimbabwe. When there is time, I have used this video as a discussion subject on the usefulness of using models to analyse and solve problems.
Dr. Vale built models of the tsetse fly's prey in order to isolate the problem components of colour, shape, and movement only to learn through inadvertent observation that smell was a previously unrecognised factor and that the presence of human experimenters significantly inhibited the tsetse fly's behaviour, meaning that all existing research on tsetse attraction was unreliable.

This has led to the development of tricolour tsetse fly targets of framed rectangles of netting/black material/and netting, rotating in the wind, coated in an artificial scent of cow's breath.

Objective 5: Planning Method.
The introduction of the Tactical Thinking concept, and microtasks 3 and 4, was a bridge preparing the triads for the use of structures to organise the plan.
The use of conscious plan structures does four important things:
1   It demonstrates to the team that the leader has used

process on the problem, making creative use of the robot
aspects of SPS/STP.

2   Makes the plan more "digestible" in its use of
SPS/STP cues, allowing individuals to focus upon
priorities and spot gaps in task structure.

3   Allows the planner to experimentally develop and
articulate the plan stage by stage, visually checking the
plan against the model.

4   Reduces stress in both the leader and in the team,
during the task-presenting and simulation/rehearsal phase
by its demonstration and confirmation through the model,
phase by phase.

As an illustrative metaphor for the structuring processes
about to be introduced, the instructor holds up a
transparent plastic egg-tray, then places it over an OHP
which projects its structure onto the screen, like a
transparency.

The instructor asks the triads to list the design features
and purposes of the plastic egg-tray. The resulting
information is generally a product of two functions,
basically it is a

1   Container - relatively strong and stackable.

2   Display - of eggs, showing quality, quantity,
        size, type and condition.

A rhetorical question is put to the triads,

        "wouldn't it be useful if we had a similar container

        for all the information we need to put into our

plan?"

A simple non-mathematical relationship is suggested:

Plan = Team x Time.

Always consider your plan in two dimensions: Team and
Time. Draw a vertical column for each team-member in the
plan. Superimpose horizontal columns for each sub-task or
action phase. The result is a plan-grid or matrix with
two axes: team and time.

The Plan-Grid (PG) design enables you to plan for
concurrent activity: using the resources of team and time,
sensibly.

Before you begin to draw up your PG, examine your chosen
plan and apply Tactical Thinking: TT = I.S.T.

1   Identify all the problems you face. (I)

2   Put then into a sequence of sub-tasks. (S)

3   Allocate time to each sub-task or phase. (T)

The effect of TT is to break the plan into a series of
smaller actions which together achieve the Aim of the
original AFCOP.

Your first phase is always an administration phase,
consisting of final checks carried out before the action.

      When you have completed your PG, you may spot a box
or two not filled with instructions for a particular
phase, this visual check could mean that you have

1   Forgotten someone or something.

2   Don't need any action by that individual in that
phase.

3   Have not planned efficiently.

A TT/PG format sheet is usually issued in the microtasks that follow, to develop the idea of the relationship between the two processes.

TT/PG Format Sheet


```
△ _____
   1 _____
   2 _____
   3 _____
   4 _____
   5 _____
                              Time Allocated:
```
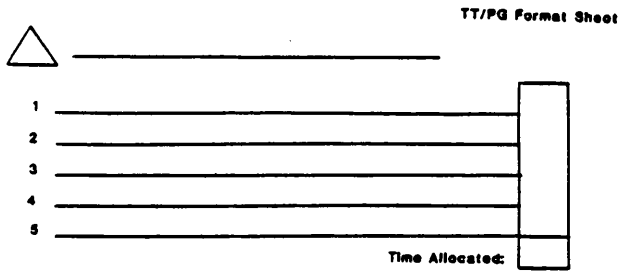
	Team-Member A	Team-Member B	Team-Member C
Phases:			
1			
2			
3			
4			
5			

Tactical Problem-Solving (TPS)

The top half of the TT/PG format sheet consists of an Aim symbol (triangle) in the top left-hand corner for a restatement of the Aim from the AFCOP format sheet. Immediately below, is a series of 5 horizontal columns with a vertical column for estimated time for each TT phase to be recorded.

In the bottom half of the sheet a PG is drawn up, with a vertical column for each triad member and five horizontal columns, one for each time-phase.
Always check your TT against the PG, each time-phase

should solve a problem for you.

AFCOP(*M) -> TT(*M) -> PG(*M)

(*M) = use of modelling to develop the process.
Before you explain the PG to the team, work it through by
modelling it. Use small counters or coins to represent
team-members -showing each person's location, phase by
phase. Similarly, use the model to explain the PG and for
team-members to confirm.

It is often useful to consider some of the planning dicta
which over the years of developing this microtask and
macrotask approach, have become consistently featured in
the Lessons Learnt feedback sessions:

1   TT (Tactical Thinking).

2   DIN/TIR - Do it now!/ Time is a resource. Do not be
tempted to put it off until later. If you do, there is a
tendency to believe that the "gut" feeling approach is the
product of some unconscious processing going on whilst you
consciously ignore the problem. Thinking of Fred on the
1984 INSET, there is clearly defocussing for a purpose -
to make focus sharper, and defocussing as means of
reducing tension and then over-identifying with the first
idea you have.

3   KISS - Keep it simple, stupid! Perhaps the hardest
thing of all to do. It seems to be easy to make a plan an
aggregate of all the ideas that have occurred to you. The
more complex the plan, the harder to co-ordinate and the

more difficult to explain. Wellington is supposed to have

said that soldiers can probably only learn to do three

things. If on the day of battle you can get them to do

just two of them properly, you may win. KISS naturally

leads on to the next consideration:

4   Murphy's Law - "If it can go wrong, it will."

5   Superior method means speed: a skilled worker seems

to work effortlessly, he knows where to focus his energy

and attention, he has internalised all the cues within the

working environment. If you have to plan for action

within tight time limits, with the added spur of a hostile

environment you may have to rehearse and develop your

method until you get it right. Beckwith and Knox (1985)

comment usefully upon this problem:

> "Speed for its own sake," I'd explain for the
>
> hundredth time more and more like a professor, "is
>
> the worst thing we can do. The object is to work on
>
> method. It'll be done faster when it's done more
>
> methodically."

6   DFN - Don't forget nothing. This was the last in a

series of Roger's Rangers SOPs, a kind of 18th Century

equivalent of the Special Air Service.

7   Practice makes perfect. Your planning doesn't really

end until you have rehearsed to your own satisfaction.

Leading the rehearsal can be much more difficult than

leading the task itself.

Rehearsals act as a kind of three-dimensional

modelling enabling you to:

Improve techniques important to the task.

Discover weaknesses in the plan and the team.

Focus the team's concentration, helping them to

visualise the action.

Two Intermediate Microtasks: 5 & 6.

Microtask 5: The Polystyrene Ball and Sand Mixture.

This emblematic microtask with overtones of Sheldrake

(1981), was based upon the story of Imo (Attenborough,

1979), a female Japanese macaque who developed a method of

separating sweet potatoes from the earth and sand mixture

the Japanese scientists had buried them in. Imo developed

the habit of submerging the dirty sweet potatoes in a rock

pool. Later, Imo's companions began to do the same. When

the scientists mixed unhusked rice with sand, Imo would

grab handfuls of the sand/rice mixture and throw them into

the water. Once again, the habit spread except among the

older macaques. The point of the story, according to

Attenborough:

> "This ability and readiness to learn from your
>
> companions results in a community having shared
>
> skills and knowledge, shared ways of doing things -
>
> in short, a culture."

In the microtask, we issue a mixture of sand

and polystyrene balls in a tin, a washing-up bowl, a paper

cup of water, some plasticene, a pin, and a plastic

teaspoon. A motivation in introducing this whimsical

microtask was to emphasise basic AFCOP procedure, as well
as develop the TT/PG routine. To this end, the problem
offers at least 6 basic alternatives, each of which can be
analysed in terms of TT and laid out simply in a PG.

   a. Shake the tin containing the mixture, the
   polystyrene balls will gradually rise to the surface.
   b. Pour mixture into the tray, then pour water onto
   the mixture, the polystryrene balls float on the
   surface.
   c. Mixture into tray, then stroke your hair with the
   plastic spoon, the resulting electrostatic charge
   will lift the polystyrene balls.
   d. Make holes in the cup and sieve the mixture.
   e. Flatten the plasticene into skin, make holes in it
   with the pin,and then use it as a sieve.
   f. Pour mixture into tray, then pick out balls with
   pin.

Microtask 6: The Cup of Tea.
This move from the emblematic to the domestic was a
recognition of the limitations of mit 5 in developing the
TT aspects sufficiently. Its usefulness lies in the
employment of a known, simple routine process under
slightly unusual conditions.
The script asks the team to make a cup of tea, upon a
table, in the open, in silence. The TT leads to the
realisation that there are at least 4 sub-problems to be
solved within the PG. As the PG is drawn up, the number

of blank boxes suggests that only two members of the triad need to be involved.

Objective 6: Systematic Task Presenting (STP).

The points about the importance of structure in problem-presenting that we developed in the Lessons Learnt of Microtasks 3 and 4, is developed here.

Research (Duncker, 1945) has shown that consistently successful problem-solving depends upon a structured or systematic presentation of problems. A consistent structured approach to the task is the best support for a leader's position in conditions of either very high or very low threat (Fiedler, 1967).

Systematic task-presenting (STP) is a means of always consistently telling the team exactly:

1   What they need to know.

2   What they are required to do.

- No matter what the prevailing circumstances happen to be at the time.

To ensure that we forget no important detail, we stick to formats. Initially in 1984, I used the military mission format (GSMESC), unfortunately, the military sounding to the terms developed military overtones which affected the civilian macrotasks exercises. I found that like soldiers upon tactical training, they concentrated more upon acting out what they imagined to be a "military" style of role-behaviour, than upon practising SPS and STP. Although to

me "a spade is a spade", in reality the percieved language context of a spade can make it a "cultural carrier", interfering with the learning of skills, by swamping students with echoes of irrelevant context. As a result I developed a similar, more explicitly neutral STP format (TFALR) and two-page format sheet.

A superficial illustration of the two formats' mnemonics:

Military (GSMESC)	TOGPSP (TFALR)
Ground	Target
Situation	Factors
Mission	Action (includes AFCOP's PG)
Execution	Logistics
Service Support	Review
Command and Signal	

Presenting a task is a performance, and so just like an actor you need to prepare by setting the scene; ensuring that before your performance begins:

1   You have rehearsed the TP (this includes actually drafting your confirmatory questions during the Review session).

2   You can explain the model or diagram used.

3   The correct people are present, with the correct equipment.

During the TP:

4   Team-members take notes.

5   You systematically run through the STP sequence,

using the model in the PG sequence.

6   Postpone questions on detail, until the Review.

During the Review:

7   Everyone understands the team's target and their

individual contribution to it as individuals.

8   Team-members confirm the PG sequence on the model.

So now our TOGPSP process of systematic PS and TP looks

like this:

(AFCOP -> TT -> PG(T) -> TFALR)*M

where (*M) implies that modelling is present in all these

steps, and (T) says that testing the Plan Grid follows

immediately from framing it.

The Final Microtasks:

The last four microtasks all develop the process with

variations in emphasis upon the use of Tactical Thinking.

In these microtasks there is an increasing emphasis upon

independence, and systematic task-presenting (STP) with

the appointment of leaders and ad-hoc teams from among the

triads within the group.

These microtasks are process culture-carriers in their own

right, developed to build up the students' ability to

a) Concurrently coordinate the teams by focussing upon the

structure of the Plan,

b) Identify and develop techiques instrumental to the

task,

c) Review plan performance within the PG through review of

task criteria, and finally

d) The explicit use of TOGPSP processes, continuing the

Skill/Practice/Feedback theme against a deliberately

engineered background of deadlines, a new accent on

testing and evaluating the planned performance and

demonstrating the liberating aspects of process focussing.

Microtask 7: The Jigsaw-Sprint.

The main features of this task were outlined in pages

4.16-17. This microtask was developed before I came into

contact with Adair's (1973) use of a two-jigsaw problem as

a kind of thematic Leadership Rorshack ink-blot test.

Clearly Adair, like myself, was looking for problems whose

resolution was unambiguous.

The "jigsaw sprint" microtask requires the systematic use

of process in the assembly of a jigsaw "in the fastest

time possible".

Each triad recieves a cardboard box containing a soft

pencil, an eraser, and a 20-piece jigsaw. The action-

phase must begin with the jigsaw disassembled, the pieces

randomly spread and face-downward on the triad's desk. At

the end of the action-phase the jigsaw must be correctly

assembled and face-upward on the desk surface.

The chief emphasis within this microtask is upon

developing a good assembly method. Everything hinges upon

a thorough initial AFCOP carrying out an analysis of the

factors to a sufficient depth. For example, among other

considerations (like manpower, ergonomics), the Factors
analysis must not only realise that there are 20 pieces to
the jigsaw, but that there are functional sub-categories
among those pieces:
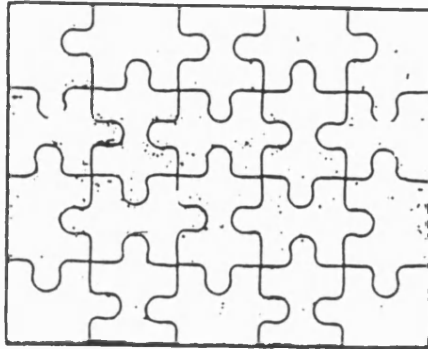
Straight edges: 4 corners

   5 "male" (no head, two arms)

   5 "female" (a head, no arms)

Rounded edges: 6 central pieces (heads and tails, no

   arms).

The Courses Open analysis usually develops along the lines
of a decision-tree.

The three basic Courses Open considered, determine the
development of the final Plan:

1   Assemble the jigsaw face-upward.

Turning over each piece, identifying their locations
within the jigsaw through use of the Jigsaw box-cover as a
structure guide.

2   Assemble the jigsaw face-downward.

The team develop a marking system for the backs of the
pieces, this marking system needs to be determined by the

priorities of the assembly system.

3   The use of manpower.

In terms of Courses Open 1 or 2 above - for instance: do
you have two sorters, delivering pieces in an agreed
sequence to one builder?, or just one sorter delivering to
two builders?

As the teams work forward analysing and developing Courses
Open, the application of Tactical Thinking (TT) is
usefully illustrated, producing TT analyses in terms of
planned action-sequences. In terms of Course Open (1):

a. Identify and sort the pieces.

b. Deliver pieces in a suitable sequence for
assembly.

c. Assemble.

In terms of Course Open (2):

a. Pre-action treatment - code the backs to aid
assembly sequence: as per position in jigsaw and
identity of assembler.

b. Identify and sort pieces.

c. Deliver in sequence.

d. Assemble.

e. Flip over.

Once the Plan has been chosen, and everyone has explained
their TT and PG to the group, I feed another factor into
the problem.

We reconsider the initial aim of assembly within the
fastest time possible. Estimates are taken from the

triads who have all been timing their performances. I
then suggest a new standard time of 25 seconds. This
produces consternation and some uproar, but we then move
into a rehearsal phase where their fastest technique for
assembly is timed. The resulting pressure and stress
forces the team to review its chosen method, looking back
at the AFCOP, reviewing the method in terms of TT -
usually scrapping it, and developing a new one.
At this point I break up the original triads, appoint
observers, and triad leaders to systematically present
their method via the STP format headings and conduct
rehearsals with a fixed performance readiness deadline.

The key aspects of the TOGPSP system are practised, with a
new kind of ruthlessness in terms of efficiency. The
change in timing is more productive in terms of Lessons
Learnt, because it forces the triads to review their
initial SPS.

Microtask 8: The Cone-Dance.

This microtask was developed as a result of the failure of
Junior Leaders upon the Search macrotask, to see their
plan sequentially. I realised that I needed to develop a
kind of creative imagination that could think ahead in
terms of stages and consequences.
This microtask was engineered to develop an implicit TT
approach, where the whole task sequence was given to the
student and all he had to do was to deal with the
problem of coordinating each phase of the sequence.

I might also add that our drive along the M4 to the Forest
of Dean for the macrotask exercise invariably showed us
magnificent arrays of large plastic traffic-cones. This,
plus an incidental interest in chess led to the task's
development in 1984.

An Anxious Team About To Start The Dance.

Each team is given a set of six large traffic-cones and
issued with their own individual triad sequence of cone-
formations to lay the cones out in. The triad is told

that they will be given an additional triad later on to make them up to six individuals to carry out the task. The sequence must be completed correctly within 30 seconds. In each formation, apart from the start and finish, the cones must be correctly laid out and at least two metres apart. During the action-phase there must be no use of speech, notes, sound or handsignals. The "dance" floor must not be marked prior to the action-phase.

Only one full-scale rehearsal with the cones is allowed before the action-phase.

To help with the modelling aspects, six wooden blocks are issued to the triads.

There are at least six basic options within the Courses Open. As in microtask 7, the need for a well-developed AFCOP to base the subsequent levels is underlined within the rehearsals. As before, the STP aspect is exercised either by the arrival of strangers from outside the class to make up the teams to full-strength teams of 6, or by a reallocation of students to produce teams of 5 fresh students to each prepared Leader. Observers are appointed, and the importance of communication, modelling, and rehearsal fills the Lessons Learnt session. The use of untrained outsiders or strangers to the triads in the STP stage provides useful positive feedback to the teams about the usefulness of structure in presenting a plan, since the involved detail and volume of communication, the

exhilaration of synchronised teamwork and the teaching aspect takes the teams into a world of focussed concentration.

Microtask 9: Buildex.

This problem was originally developed to demonstrate the difference between democratic and centralised leadership aspects in the pre-skills days of 1981-83.

In this microtask, each triad member (call them A, B, and C) gets to construct a specific arrangement of building blocks and rulers on a desk surface within a time-limit, using the other two triad members as workers.

The microtask specifies that during the action the leader can speak and offer verbal instructions but may not get physically involved; at the same time the workers are blindfolded, can handle the materials but may not speak.

At the beginning of the action, the bag of 22 wooden blocks must be under the desk, while the three rulers are allowed on the desk.

The three constructions are as follows (see diagram, page 5.55):

A A vertical tower, 12 units high (within 15 seconds).

B A hollow box base of 5 x 4 units (inclusive), with two additional towers three units high on diagonally opposite corners (within 30 seconds).

C Three vertical towers of four units, in a triangular formation connected by three overlapping rulers - at

B's task: A base of 4 X 5 blocks, with 2 towers of 3 blocks on diag. corners.
  - within 30 seconds.

1 + 3
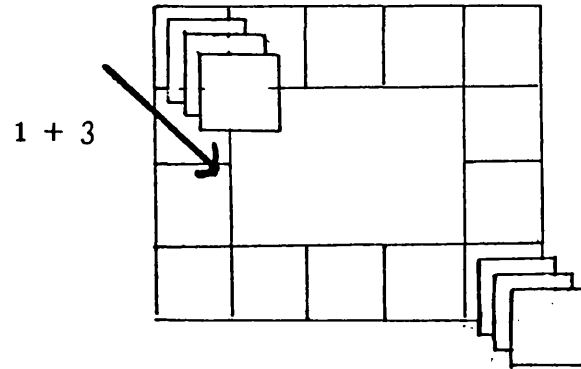
A's task: A tower 12 blocks high
          within 15 seconds.
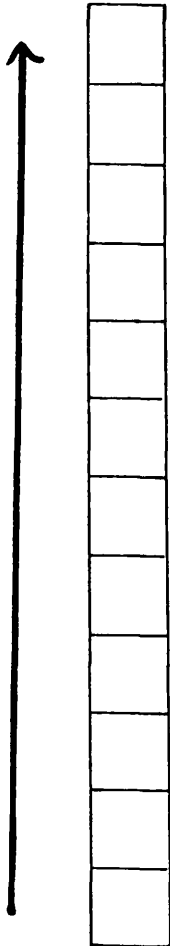
3   - on mid-point

C's task: A base of 3 towers, 4 blocks
          high, connected with 3
          overlapping rulers.   4(base)
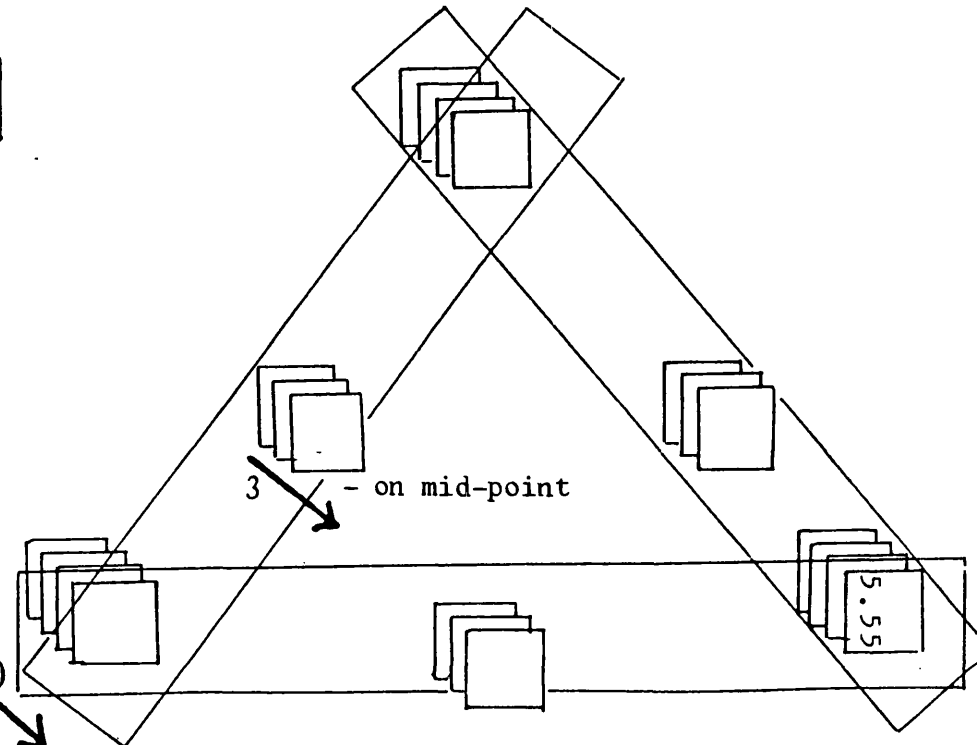
At each ruler's mid-point, a
supplementary series of towers
each 3 blocks high - within 60 seconds.

the mid-point of each of which ruler, stands a
further tower three units.

To get over the initial shock of the apparent
impossibility of these tasks, three planning groups are
formed in the classroom to work through the TOGPSP
processes. The instructor rotates around the three groups
of As, Bs, and Cs observing the progress through the
processes to STP, sometimes acting as a kind of agent-
provocateur when the triads look as if they are going down
a blind alley. Gradually, as they operate the process,
the groups become more confident, most re-constituted
triads go on to complete their constructions in good time.

In terms of the Lessons Learnt, the primacy of SPS/STP is
established again: it is a very effective metaphoric
illustration of the principles of good method = good
performance; on the other hand, the role-differentiation
and the stimulus deprivation elements highlight the
affective "trust" aspects as well as the team-members'
need to develop simple skills such as learning to listen,
and to confirm.

Microtask 10: Cobex.
This was the earliest microtask to be developed, and it is
fitting that it should be the last. In this summative
set-piece microtask, the final microtask before an outdoor
macrotask exercise, the blindfolded, silent triad will
cook and eat a can of beans within the exercise area, and

exit within six minutes.

Two desks are set out within a defined task area (usually
a quadrangle or a well-ventilated room - as per the
diagram on page 5.58). The floor of the exercise area is
covered in plastic sheeting. On the surfaces of the two
desks are displayed a series of items:

desk A: Ball of string, small can of beans, plastic
            bucket, scotchbrite cleaner, matches.
            Underneath, a five-litre container of water.
desk B: One mess-tin, wooden spoon, gaz or hexamine
            cooker - open with one cube inside, a folding
            tin opener.
The triads must cook and eat the beans, using their
manpower and chosen combination of items on the desks.
No-one may communicate from outside the area to those
inside. Anything used must be returned to its original
position in its original state, except of course the
contents of the small can of beans.

Fittingly the microtask is both a return to basics and an
exercise in simplicity. Of all the above items, only five
are necessary apart from the can of beans: the spoon,
matches, cooker with fuel, scotchbrite abrasive scouring
cloth and tin-opener.
The use of water to cook the can, or the mess-tin is a
dead-end. The two items that need to meet, the flame and
the tin determine the most simple and direct process.

Mit 10 COBEX

Ball of string

Full container of
water
(min. 5 Litres)

tin-opener
(folding)

matches in
box

Scotchbrite
(abrasive cloth)

Small can of
beans

Bucket
or large tin

Services type mess-tin

Spoon (wooden)

Hexamine cooker

Wooden
block(to protect desk service)
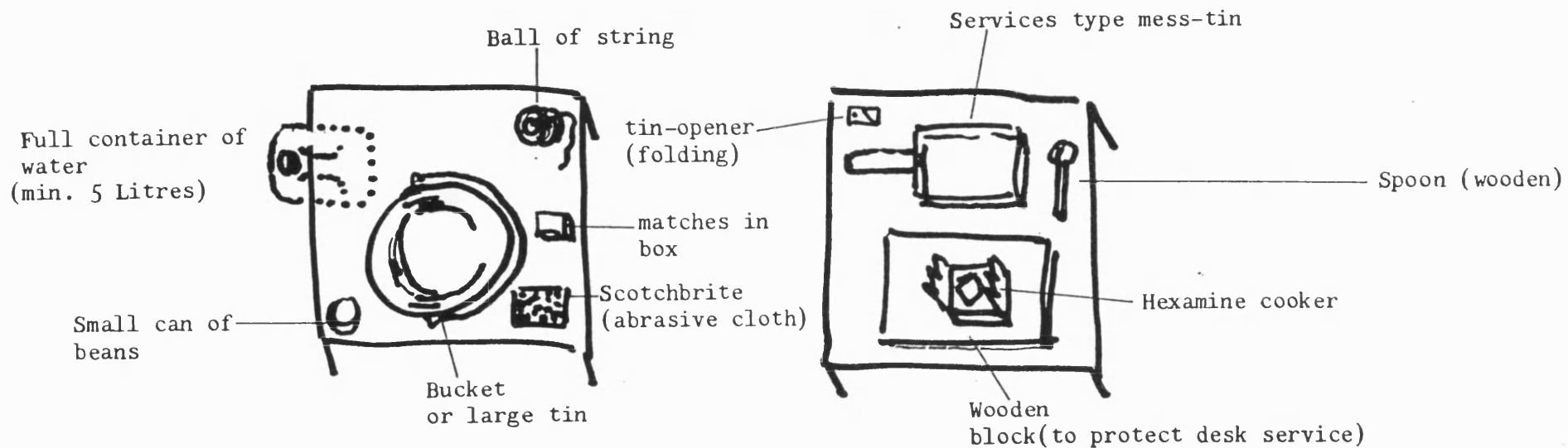
n.b. Provided for team outside the exercise area: hexamine blocks and blindfolds.

If the AFCOP produces this simple option among its Courses
Open, the microtask is well on its way to success.

In the TT/PG phase, analysis will leave sufficient
blank spaces showing a need for only two men to enter the
exercise area. Testing the PG, will point to the need for
the workers within the exercise area to have a cue for
completion of the several important stages within the
action:

  a. when the fire is properly lit and the can may be
  lowered onto the lips of the cooker,

  b. the beans are cooked,

  b. beans have been eaten, and

  c. when it's time to go.

Several instrumental skills will also need to be
identified through testing procedures and rehearsal:
folding the lips of the cooker inward to hold the can over
the flame, opening the can - blindfolded, lighting the
fuel safely, handling the hot tin of beans.

A Brief Microtask History.

The microtasks were developed in four phases. In phase one (May 1981 - October 1982), the pre-microtask phase, I had developed two problems which I used as demonstration problems. The first problem involved the heating and consumption of a can of beans (later called Cobex), in darkness and silence. This problem was set as a purely humorous illustration of how useful and necessary detailed instructions could be, when carrying out familiar operations under unusual conditions. The linking of military orders and rehearsals to an absurd scenario highlighted the importance of clear instructions and sensible planning without getting involved in conventional, hypothetical military combat or socio-administrative problems.

The second task to be developed was the Buildex problem, originally developed to illustrate some of the differences experienced in team membership under democratic or centralised leadership. Two teams were set up in this exercise. A leader was appointed from each team. Each leader was briefed on his role and his task. During the timed action-phase, only two of the four workers in each team were allowed to handle the cubes. These two were blindfolded. The remaining two sat with their leader and watched.

The democratic leader was told to be friendly and to discuss the task with the team and consciously make an

effort to develop consensus and listen to everyone's
views.

The centralised leader was told that he alone was
responsible for the task's success. He should accordingly
only tell the team what they needed to know, when they
needed to know it, and no more.

Each team was given a simple and a complex construction
task involving sugar-cubes which was to be timed. At the
end of the exercise, the team-members were asked to talk
about their experiences. Within the centralised team it
was generally the case that morale was high for the leader
but low for the led, that the centralised team was faster
than the democratic team in the simple task, and probably
more capable of carrying out its simple task under
conditions of stress. Conversely, the democratic team's
morale was held to be uniformly high for both leader and
led, the democratic team was generally more successful in
the complex construction, though dependent upon a
relatively stress-free environment; with the advantage of
information-sharing enabling it to complete tasks even
when the appointed leader was removed.

Another problem was developed in phase two (October 1982 -
February 1983), the Cone-dance or as it later became
known: "Conex". This problem was designed after noticing
the difficulties that many Junior Leaders had in co-
ordinating their teams' movements during the Search task
(see Chapter 5) in the Forest of Dean. The Search task
required some initial intelligent phasing of the action,

and after some basic administration, demanded some
effective control of the search team by the leader as it
covered difficult and varied terrain looking for a
notional contaminated casualty. Feedback from exercise
Directing Staff had identified a general inability to co-
ordinate and control the team movement in suitable
formations during the search, so as to compensate for the
team's restricted vision and mobility whilst wearing
respirators and Nuclear, Biological and Chemical (NBC)
warfare suits within the search area. Somehow I needed to
develop a problem which might bring out a kind of "spatial
awareness", a kind of consciousness of the importance of
everyone knowing where everyone else in the team was, and
what they were meant to be doing during the action. My
initial impression was of the need for some kind of chess-
game involving students in special formations. From that
point onwards, it didn't take long to link the chess idea
to that of moving large traffic-cones into different
patterns.

The third phase was the most prolific, between February
1983 and March 1984, seven new developmental problems were
introduced into the programme, designed to prepare the
students for the three existing microtasks, by further
developing the initial problem-solving stages. The need
to work backwards to develop students' problem-structuring
procedures, by slowing them down before they rushed into
developing alternative Courses Open had become quite

evident, from the somewhat hit-or-miss selection of suitable Courses Open. I was still conscious of the programme (as it was then) presenting too much information without associating it with useful confirmatory action. This meant that the three existing problems were still seen as isolated events occurring towards the end of the programme.

I began to research problem-solving theory at this time, finding Kleinmutz (1966), Manis (1966) and Mayer (1977), particularly useful. I decided to develop a series of problems which were, in themselves, largely expendable. That is, they would be used just as long as they were seen to be useful. My priorities were two-fold: to develop students' use of process, and to help them to slow down and consider the elements within a problem in a new light; and as a result discover that this slowing-down could enhance their ability to develop alternative Courses Open before they ended up reinforcing the first idea that came into their heads.

Seven problems were developed, some of which were shamelessly derivative of classic problem-solving experiments in the area of functional fixedness:

1   Water Transfer.

In this problem, there are two 5-litre containers, A and B. A is full of water and placed upon the corner of a table, upon and from which it may not be moved. Container B is empty and placed on the floor by the table, container B has no fixed location.

Kit 2

5L container A: It cannot be moved from the table corner.
Contains 5L of water.

5L container B
- empty.

4' flexible rubber tubing

T-shirt or
old KF shirt

A4 Exercise book

300ml ruler
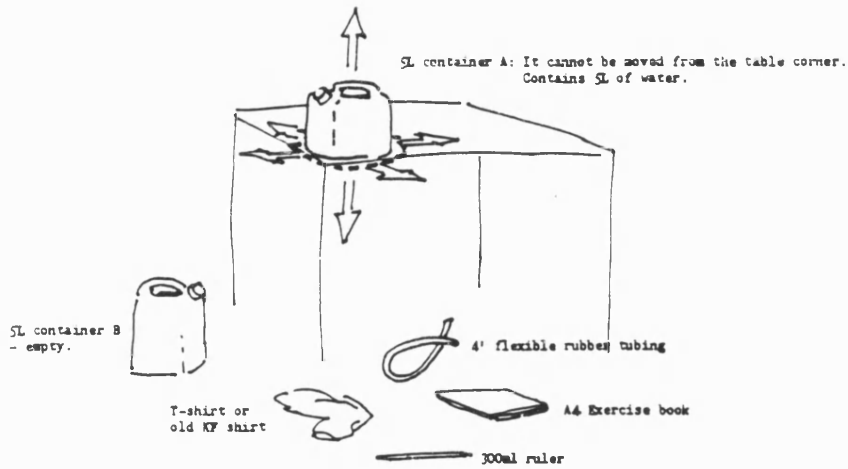
Provided nearby for the team are a 4-foot length of
flexible rubber piping, an A4-sized exercise book with a
cardboard cover, a 12-inch plastic ruler, and an old
cotton T-shirt.

The team are told that the objective of this microtask is
to transfer the water from container A to the empty
container B. The teams are asked to develop and
experiment with several Courses Open. The most obvious
tended to appear in this order:

    a. Siphon, using the flexible tube.

    b. Make a continuous cloth strip between the

    containers, and the water would eventually "creep"

    via capillary action.

    c. Use the cloth as a sponge, feeding it into

container A via the neck, then squeezing the water

gained into paper cups made out of the exercise

book's pages.

d. Shatter the plastic ruler so as to provide a

sharp, pointed end which is then used to pierce the

side of container A. The resulting deluge is caught

within a cardboard funnel (made out of the exercise-

book) and directed into container B.

My conscious design intention had not been to duplicate

aspects of classical research, but simply to provide some

simple, unambiguous material for students to work through,

which would incrementally build up their basic problem-

solving muscles. The obviousness of Course (a) made the

development of the other three, all the more taxing and

enjoyable. The only major drawback was the destruction of

MoD rulers, and the resulting dampness of the classroom

carpet. Looking back now, I see this problem's

antecedents in Saugstad and Raaheim's transfer problem

(1960) within the area of functional fixedness; involving

the transfer of steel balls in a bucket on a trolley into

another bucket, both 260 cms behind a chalk line through

the use of familiar objects (pliers, rubber bands,

newspaper, nails and string) in a new function.

2   Two Vertical Ropes from a Ceiling.

This problem (discussed in detail earlier in this

chapter) was directly derived from Birch and Rabinowitz's

(1951) version of Maier's (1930; 1931) original

experiment.

My development of the basic problem continued the theme of
using familiar objects in new ways. I shifted its
emphasis, using it to underline the importance of using
models to communicate and develop alternative Courses
Open. Only one member of the team was allowed to see the
problem which he then had to communicate back to the rest
of the team, which would then have to build a working
scale model to test all the possible alternatives.

3   Three Candles on the Door.

This was derived from Duncker's original 1945 box problem,
designed to investigate functional fixedness.

In the original experiment, the subject was given three
cardboard boxes, matches, drawing pins and candles. The
goal was to mount a candle vertically on a nearby screen
to serve as a lamp. Some subjects were given a box
containing matches, a second box of matches, and a third
containing the drawing-pins. Other subjects received the
same items; but not contained within the boxes. The
"solution" - to mount a candle on the top of a box by
melting wax onto the box and sticking the candle onto it
and then pinning the box onto the screen - was much harder
to discover when the boxes were given filled, rather than
empty.

I decided that this prescriptive "solution" was too
definitive for my purposes, and redefined the problem as
being that of attaching 3 small candles to the vertical

surface of a door, excluding all incidental horizontal surfaces. Initially I provided a single matchbox containing a match, the three candles, and 4 drawing-pins for each team. After a year, I reduced the drawing pins to just one, and provided each team with a vertical hardboard surface. This problem was very useful in establishing the basic AFCOP procedure of listing the individual elements. The development of Courses Open proved to be fun as well! Here are some of the more obvious alternatives:

a. Pin candles directly to vertical surface, via all three candle wicks.

b. Using the single match and the striking surface of the matchbox, melt one side of each of the other candles so that they adhere directly to the vertical wooden surface.

c. Pin the shallow wall of matchbox drawer to the vertical surface, and place the candles within.

d. The so-called "SAS" method!: light all three candles, allowing them to melt into a warm waxy ball which is then thrown at the vertical wooden surface.

e. Pin one end of the match to the surface and wedge all three candles under the match.

4   The Imo Problem.

The Imo problem was another "manipulative" problem that could be solved if you had some knowledge of the varying characteristics of the materials involved. The source of

this problem was the story of the female Japanese macaque
monkey called "Imo", told in David Attenborough's BBC
series in 1979; who demonstrated the macaques' ability to
learn whilst being studied by japanese scientists.
Although fun, it could be rather messy.

5   Hot/Contaminated Water Problems.

Essentially both problems involved heating 5 litres of
water until it began to produce steam within sixty
minutes. The drawback was that no metal container was
provided for the team. The equipment provided, included
the 5 litre plastic container of water, a large plastic
sheet, a box of matches, and old T-shirt, a spade,
assorted sticks, and solid hexamine fuel and cooker.
Several alternatives were usually developed:

    a. Dig a hole, line it with the plastic, pour the

    water into the hole, drop in heated stones (via the

    shovel-blade).

    b. Heat small stones on the shovel blade and drop

    into the 5 litre container.

    c. Hold the container over the flame of the cooker

    until the bottom of the container begins to melt.

This problem was usually followed (if time permitted) by
the instructor dropping some coloured dye into the water
and announcing that the water was contaminated, and the
new objective was to produce at least half a cup of
uncontaminated drinking water. This variation was
dependent upon (c) above being adopted, and the

combination of both required at least six periods to
accomplish properly.

Although the "survival" skills aspect of this problem,
(being derived from a combination of the desert solar
still and water convection techniques) was superficially
attractive to students and instructors, the restrictive
nature of the solution and the small amount of
identifiably useful process learning to be gained from
carrying it out over six periods, meant that after a year,
both of these problems were abandoned.

6   Jigsaw Sprint.

The source for this problem is difficult to identify. I
think that I was probably influenced by the gusto with
which my (then) 2-year old daughter assembled her simple
plastic jigsaws.

I had also noticed the way in which jigsaws "focussed" the
attention of assemblers. The way in which large jigsaws
required a consciously developed approach, broken into
simple, sequenced stages, seeming to closely duplicate an
important aspect of the macrotask exercise in the Forest
of Dean.

I was also looking for problems with unambiguous goals,
clearly defined givens and obstacles between the two,
which needed to be resolved. Here the obstacle could be
resolved by a combination of a conscientiously applied
AFCOP system and physical manipulation of the problem both
forwards (from givens to goals), and backwards.

I suspect that the choice of "Postman Pat" 20-piece jigsaws was my way of saying that this area of learning required a return to basics, before we could go forward again.

Finally, this problem was simple to administer.

During this phase, the first experimental steps were taken in profiling (as described in Chapter Two) both the microtasks and the macrotasks.

The idea of profiling the microtasks was eventually dropped. The central reason for this, was the realisation that the profiling was really only applicable to the macrotasks, since only the macrotasks contained the complete process-cycle, and the developmental microtasks (except for Cobex) contained only segments, never quite all of the process.

In the most recent phase of development, microtask 6 was abandoned, and the Imo and the water-transfer microtasks became optional. Instructors felt that we needed a new initial microtask to introduce the use of the AFCOP system (Silent Message), and in December 1985 requested another optional microtask (the Cup of Tea), to develop the Tactical Thinking (TT) concept before introducing the Jigsaw Sprint.

The Silent Message (Microtask 1) was a perhaps one of the most artificial microtasks developed in the series. As an initial microtask, I wanted to concentrate the students' attention upon the first three steps within the AFCOP:

stating the aim, listing the factors exhaustively, and developing simple Courses Open by actively experimenting.

The microtask's hardware was deliberately simple. We had received several adjustable display screens, mounted upon sectional aluminium poles. The screen could be mounted so as to leave an 18-inch gap below it. The screen was placed in a line between two chairs, facing in the same direction, A and B. A's chair was 1.5 to 2 metres away from the screen, and B's 2.5 to 3 metres on the other side.

Mit 1

B's chair

Portable Screen

A's chair

2.5 to 3m

1.5

4' flexible rubber tube

ball of plasticene

A4 sheet
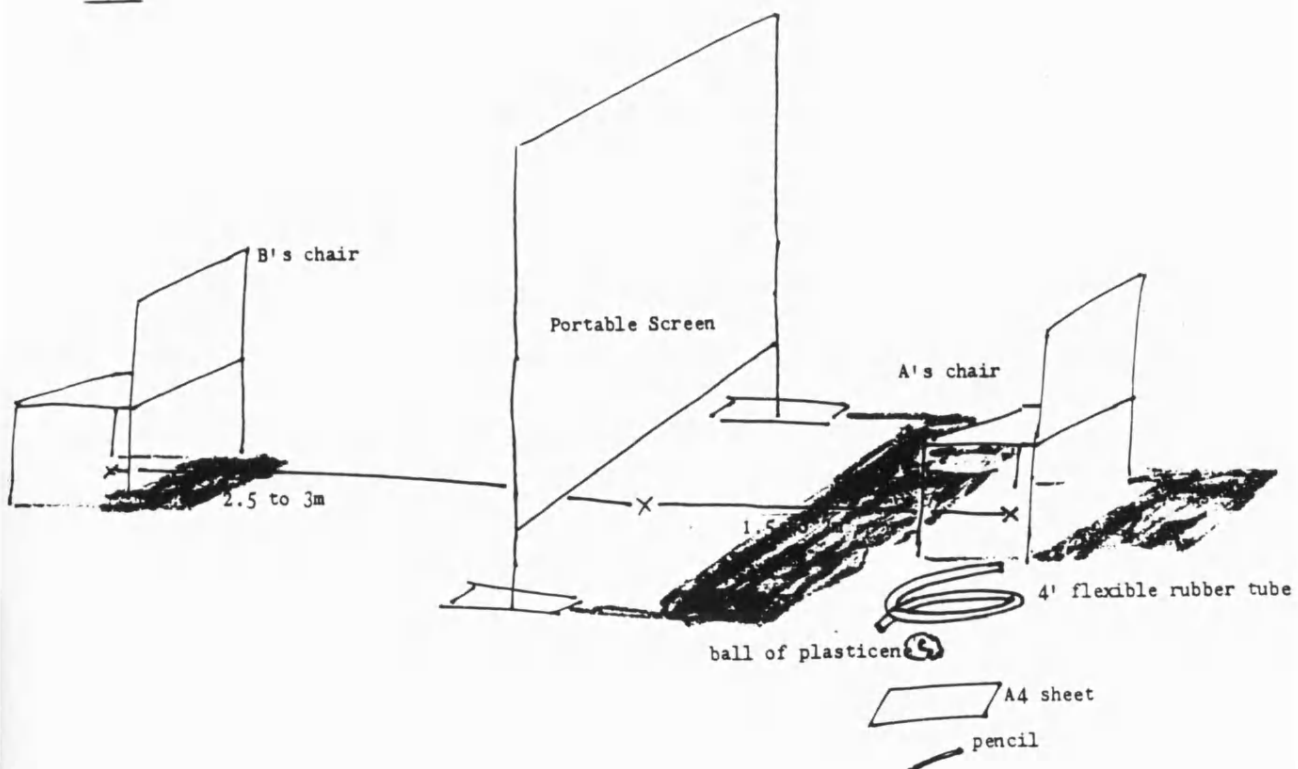
pencil

On the floor by A, were located the ubiquitous 4-foot length of rubber tubing and ball of plasticene, an A4-sized sheet, and a pencil. The teams were told that the microtask would begin with students sitting in the chairs, facing in the same direction. The objective was to pass a message from A to B, which must be carried out by B, behind the screen within 20 seconds (originally 30 seconds) of the instructor exposing the message to A, on a card.

Message Example.

Sit on your chair, hands

over your eyes.

A cannot pre-brief B, they cannot leave or move their chairs, speak, hum or tap the floor or their chair.

A typical message might read "B, stand on left leg, on chair".

Once delivery of the problem had been sorted out:

> a. Paper plane (pre-folded) with message, flown over screen or skimmed along floor.

> b. Plasticene ball wrapped up with paper with message, delivered under screen.

> c. Paper message jammed into end of pipe with pencil, and thrown over screen to land on head of B.

- The key of drawing a matchstick man onto the paper or onto the plasticene material, usually led to the task being achieved within the time. This also usefully laid the foundation for the later introduction of models or diagrams of problems, as a means of communication and an aid to problem-solving.

- Occasionally we had a few teams suggest the Course Open of:

> d. Throw plasticene ball forcefully at screen, knocking it over, act out message hoping B will respond. (Which _did_ work, at least until we reduced the amount of plasticene, issued.)

In spite of what I felt was its artificiality, this microtask was successfully introduced and seen by instructors to be doing its job.

A New Direction

A recent development in three of the microtasks, has been
the introduction of what Maier, 1933 (Mayer, 1977) called
"direction" or some kind of hint. The original
experiments conducted by Maier, Saugstad and Rauheim seem
to show that part of solving a problem is finding out how
it related to past experience. Birch and Rabinowitz
talked about using "an essential repertoire" of past
behaviours and experiences in solving Duncker's problems;
however, sometimes past experiences are not enough to
generate an original solution, a new way of looking at the
problem is required, a new direction.

In Maier's original two-cord problem (adapted into
microtask 4: Two Vertical Ropes from a Ceiling), he found
that those who failed to solve the problem without hints
(walking past one of the cords, so that it moved) did so
almost immediately after the hints were given. The
solution apparently appeared suddenly in a complete form,
and many subjects were not even aware of the hint.

The "direction" I gave recently (1987-88), consisted
of telling discouraged problem-solvers the optimum time
achieved on several microtasks. The most signal example
being A's problem in Buildex (microtask 9). It was only
after being told that the task could be achieved in under
four seconds instead of the required fifteen, that the TT
aspects, allied to the technique of "thinking backwards"
(imagining that the goal was the given, and the given was

the goal) were thoroughly exercised.

Summary:

The sequence in which individual microtasks are
"delivered" to the students was largely determined by what
I saw as their potential to exercise and develop the
processes being taught. My basic idea was to
systematically build up the processes by deliberately and
carefully developing a growth model of learning (see
table, page 5.76: TOGPSP Tools and Microtasks).
I was conscious of the need to go carefully because of
students' and instructors' uncritical acceptance of
an inherited "total institutional" system, which in my
view maintained passive subsistence-learning behaviours.
This problem of passivity needed the artificial creation
of another type of temporary "total institution"
environment, where this passivity became the exception,
and not the rule.
Thus it was largely the limitations of the process-stage
being taught, and the microtask's potential to exercise
it, which determined the survival and sequencing of
microtasks. The relatively precise sequencing was
developed through both formal and informal student and
instructor feedback (see Annex J.1-3: summary of subject
co-ordinator meeting: 16/12/86), and conscious preliminary
design within the original sequence.

The key to the development of the microtask/macrotask
system was the use of learning groups. With the

TOGPSP Tools and Microtasks

Systematic Tools:

(Mits)	Problem-Solving			Task-Presenting	
	AFCOP	M*	TT/PGs	GSMESC/TFALR (mil/civ)	R*
1 Message	x				
2 H2O Transfer	x				
3 Candles	x				
4 Ropes	x	x	x		
5 Poly Balls	x		x		
6 Tea	x		x		
7 Jigsaws	x	x	x	x	x
8 Blocks	x	x	x	x	x
9 Cones	x	x	x	x	x
10 Beans	x	x	x	x	x

Notes:

AFCOP =   Stage 1: Aim ->Factors

          Stage 2: Factors ->Courses Open

          Stage 3: Courses Open ->Plan

M* =   Model (deliberately built, and used to represent the relevant factors and their relationships within the problem, to test Courses Open, the Tactical Thinking behind the Plan-Grid, and to explain the Plan to the team.

R* =   To confirm the team's understanding of the Plan, and the suitability of individuals for their roles.

deliberate use of such groups as a vehicle, the main
ingredient missing from both Jackson and de Bono - the
dynamics of social groups, was present and motivating the
students. With clear learning objectives, developmental
microtasks and feedback developing the problem-solving
process skills, the learning has a momentum of its own.
These microtasks are a product of my own experiential
learning. I worked backwards from full-scale problems in
the outdoors, conscientiously asking both Directing Staff
and students for their views and analyses of "gaps" in the
teaching and exercise system. This was complemented by
selective research into problem-solving, analyses and
experimentation with processes; plus the identification of
real obstacles like functional fixedness and the natural
tendency to reduce anxiety in problem situations by either
investing in the first and often only idea that occurred
to the problem-solver, or deploying repertoire-search.

I developed experimental microtasks, which were then
modified through further analysis, or scrapped. The
Lessons Learnt review from the microtasks developed new
learning objectives, gradually teaching me to make what
were originally implicit processes, more explicit.

When I began, I never envisaged that the development of
simple "thinker", initiating skills would be so important
nor that the use of process to focus attention could be so
effective in creatively using our robot tendencies.

It never occurred to me that the essential crisis within
our British educational culture, the reconciliation of the
roles of thinker and doer, Corelli Barnett's "false
antithesis" (1987), was going to be so difficult, nor so
much fun.

To paraphrase Ouspensky (Wilson, 1979), the more I taught
it, the more it taught me.

As Miyamoto Musashi (1645) said "the teacher is as a
needle, the disciple is as thread. You must practise
constantly." And practice makes perfect.

Chapter Six: The Macrotask Development.

The original macrotasks were the stimulus for the key
developments of the systematic approach to problem-solving
and the microtasks. Both INSETS were themselves largely
motivated as opportunities or experiments in developing
techniques to improve this aspect of leadership
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In this chapter, I shall account for both the development
of feedback systems linking the microtasks to the
macrotasks, the key macrotasks, and discuss an approach
for evaluating their relative usefulness.

A Short History.

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set-piece instructional situations. The accent was one of
communicating information through an understanding of
useful conventions for framing and structuring
information. I discovered that an integrated humanities
approach was interesting, but a continuation of the
teaching styles already encountered by the Junior Leaders.
It was similarly conventional in being instructor-centred
in that the instructor did most of the work for the
students. The Command Task and the lecturette were
insufficiently dynamic as a learning medium.

I found myself exploring the well-worn path of civilian
outdoor development training. This intermediate path
offered the advantages of an environment which was not
specifically rooted within a military, or a role-culture

context. Although the outdoor challenge context was apparently neutral, I began to suspect after a time that its lack of direct relevance to leader/management skills development (Kirk, 1986; Creswick & Williams, 1979), and its ambiguous references to "personal growth", "self-discovery" and "higher levels of awareness" was really a form of "outdoorspeak" for the same old, hands-off army qualities approach, with aspects of a secular form of "muscular" Christianity.

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"mushroom" factor means that it rarely leads to

useful feedback, and feedback rarely filters down to

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change within the area of leadership development to be the

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versions of them uncritically upon trainees - in itself an

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crisis duplication approach explained the dependence of

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social training system which, if traumatic enough, could

also act as a kind of symbolic guarantor for the marginal

candidates' future commitment to the group.

The corollary of such a "qualities approach" is as Adair

(1968) said, that

"intrinsically it hardly favours the idea of training

at all... the ability to recognise a born leader

becomes all important, and attempts to make leaders

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4   Finally, that role-training confirms the games aspect

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"do you mean that the students actually get to see, and

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a stage which would practise the use of simple operational

PS and TP structures. In other words, a form of exercise which would practise drills which were not necessarily rooted within any particular tactical or style-enhancing context, but generalisable drills which had an universal application for a leader of a group with a task to accomplish. This stage later became known as the macrotask (large problems) exercise stage. With the introduction of the idea of "scale" in the word macrotask, there was, by implication, a need for a preparatory stage of microtasks (small problems), whose deliberate small scale would incrementally develop the processes required in the macrotask exercise.

Feedback Proforma: The Keys to the Skills Culture.

The question of feedback seemed to be the key to defining the type of training that I felt was necessary.
I was not interested in attempting yet another form of disguised cultural transference, handing over my values via an opaque, style-acquisition process, and debriefing students on a qualities-based, feedback taxonomy.

My feedback system would have to be based upon an open, skill-based agenda. Therefore, the criteria within the feedback proforma would determine the type of exercise, and eventually, the processes which would have to be taught and practised.

The history of TOGPSP feedback development reflects the development of the outdoor tasks and exercises, based upon an understanding of the importance of organised

formal feedback systems, and the students' taking on responsibility for operating appropriate processes concretely, gradually reducing what I felt to be the prevailing imbalance in conventional instructor:student activity ratios, and a limiting dependency upon the instructor as the reality-monitor.   A developmental proforma "family tree" would look like this:

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    -------------------- + -----------------February 1982
                          +
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                          V
                          V
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                          V
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                          V
                          V
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      proforma mk 2.                 (TFALR TP)
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where:

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Proforma = sheet designed into a deliberate sequence of questions, used by an appointed observer or Directing Staff (DS) to ensure that the main skills points are systematically reviewed by all participants. (Examples,

Annex E.1-6.)

Students are expected to refer to the proforma during the task. The proforma acts as a kind of "purposive" contract between the training designer, the DS and the students.

My first development of feedback proforma was as a "purposive contract", largely based on my student-teacher experience of having to negotiate classwork projects with "problem" children in a South London Comprehensive.
The technique was one of mutual role-negotiation, where the pupil described to me what they wanted the project work they were doing, to say about them as individuals, and I in turn, committed myself to helping them to administer the work, through helping them to plan, review and re-negotiate the project deadlines in the form of a contract with mutual commitments and deadlines, which we signed and had witnessed.
The feedback proforma developed, based upon this idea that if you were explicit in what you wanted students to do in terms of organising themselves, and presented it to them in the form of a sequence of actions, they would be able to carry out the sequence by themselves, and through refering to the feedback proforma as they went along, would be able to locate themselves within the sequence.
Similarly, if everyone had access to this sequence, they would be able to follow it themselves, and through observation, learn from other students' mistakes.
The first 2 proforma were developed to help students to manage and provide useful structured feedback upon (1)

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The Leadership Performance Debrief (3), was the
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The approach was a variation upon the GiGo idea, priming
the student with the correct keys, then letting him run,
but always with the knowledge of what the success criteria
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to skilled performance.

By phase 6 (January 1985), students were in macrotask
exercise teams of five students, accompanied by one
Directing Staff whose purpose was to consistently carry
out the feedback session after each macrotask.

Each student was briefed at the beginning of both days, to lead a different macrotask. By the second day, the Directing Staff could allow the feedback session reviewing the macrotask, to be led by the students themselves, reviewing the leader's

1   Use of process in preparing and presenting the plan,

2   Confirmation of individual understanding through questioning and rehearsals,

3   Use of the team and behaviour during the action, and the

4   Lessons learnt.

By the second day of the exercise, students were very aware of lapses within these four areas, and would betray their anxiety when mistakes were noticed, whilst the plan was being presented, by shaking their heads, and pausing in their note-taking. By this time, if the team thought that a serious lapse had become evident in the planning which could affect the success of the plan, they were prepared to ask direct questions of the leader during the "any questions?" session, after the plan had been presented.

This was in itself, significant. On the first day, students tended to be passive during the leader's task presentation and on the subsequent review of his performance after the action, as part of an unwritten defensive student contract, whereby they protected each other from critical exposure. On the second day, the

consequences of this passivity were evident, sufficient learning had occurred, that the team had become skilled and active in focussing their listening, and impatient with mistakes.

By phase 6 (January 1985), after completing a two-day macrotask exercise, a sample of two troops of students (67 in all) were given the opportunity to respond to this question:

"Did the debrief system on the exercise lead to improved performance as the exercise progressed?"

<u>Yes = 60 students replied, within four general categories:</u>

A.   It helped a lot. (6)

B.   It opened up more ways in which we could have completed the task, by looking back at how the leader used the processes, and why he chose his plan. (2)

C.   It was a good idea. (16)

D.   Talking over and listening to the other mistakes made - helped you to make sure that everything went right for you. (36)

<u>No</u>

E.   Not enough time to do it really properly. (1)

F.   It put the leader down a bit, in front of the team. (2)

Four students left this question blank.

This focussing of attention among the Junior Leaders, the development of specific expectations in terms of preparing

and being briefed for a task, led to some unexpected outcomes in their training within the Junior Leaders' Regiment. The anecdotal evidence for these outcomes will be discussed later within the "Transfer of Learning" section.

The Transfer of Learning.

In discussing the success of the transfer of learning, it is possible to look at the evidence of transfer from one learning phase to another: the microtask to the macrotask phase, and to consider the anecdotal evidence of transfer from both phases together, into other aspects of training and working life.

In order to examine the linkage of leadership development in the microtask phase to the macrotask phase, I looked at the results of the 34 Junior Leaders in Gale Troop, on their macrotask exercise over the 12-13th of March 1987.
Students were graded according to a four-stage incremental system as per the Cordski Feedback Proforma:
"D": Indicated that the student had completed the microtask phase in the classroom, and attended the exercise.
"C": The student had to do two things:
1. Completed all the items within the pre-"O" group DS checklist (1.1 -1.5).
2. Completed a successful "O" group, from appointments within the team, use of the model,

correct subject headings, confirmation and rehearsal, to conduct of the "O" group itself (2.1 - 2.14).

"B": Students had to have qualified as per C, and D, and also demonstrated basic control of the group to achieve the task. This involved the leader being sensitive about the importance of ensuring that he was able to see what was going on without getting drawn into the action physically, responding to changes in the situation and keeping an eye on time-limits (3.1 -3.7)

"A": Students had to qualify as per D, C and B, and in addition demonstrate the ability to a) forsee problems, and b) team-build or motivate.

A point to note is that as far as validating the microtask phase is concerned, the "C" grade is sufficient, "B" and "A" are really extras. The "A" grade criteria were the product of students' competitive demand for some special recognition of ability.

Gale Troop, Individual Grading 12-13 March 1987.

	Day 2 (2nd Macrotask)			
Day 1 (1st Macrotask)	A (5)	B (16)	C (12)	D (1)
A (2)	2	-	-	-
B (5)	1	4	-	-
C (16)	2	7	7	-
D (11)	-	5	5	1

Summary:

The table above, indicates that 11 students failed to either prepare correctly prior to the task, or to give a correctly-structured task-presentation ("O", Orders group) to the team. Of the 11, only 1 failed to learn from his mistakes on his second macrotask on day 2. Of the remaining 10, 5 improved to a "C", and 5 Juniors managed an "A" grade.

16 Juniors were graded "C" on day 1: 7 remaining at this level on day 2, 7 improving to "B", and 2 Juniors managing an "A" grade.

4 Juniors managed a "B" grade on both days' macrotasks, an additional Junior improved to an "A" grade. 2 Juniors managed "A" grades on <u>both</u> days.

The transition from microtask within the classroom to macrotasks in the outdoors clearly represented initial problems for the 11 Juniors who gained only a "D" grade on day 1. All but one, "got their act together" sufficiently to improve at least one grade. Talking to the exceptional Junior who stayed at "D", it turned out that he <u>did</u> improve, but insufficiently to deserve a "C".

The table also shows that for 11 people there was a difference between being in a supportive, experimental microtask learning environment and being in effect "tested" practically, in their use of the PS and TP procedures on the macrotasks.

Of the 34 Junior Leaders in Gale troop, 14 stayed at their

original grade (only 1 remained at "D"), whilst 20

improved on their second macrotask. Clearly, whilst there

is a lot of learning within the microtask phase, 10/34

students needed both the feedback, and the experience of

observing others on day 1, to display basic competence - a

"C" grade, on their second macrotask.

   With an eye to developing video materials to explain

the approach to new instructors and to introduce the

Junior Leaders to the 5-day course, I interviewed four

teams of Junior Leaders at the end of their macrotask

phase on the 1st of August 1986. Amongst other topics, I

asked them to think about the future Junior Leaders who

were about to begin such courses and to give advice now,

on camera, whilst the experience was still fresh in their

minds.

JL1: "Always listen to what you're told, do the minor

       tasks in the classroom, do them properly, you won't

       get away with it out here.."

JL2: "Don't mess about, take everything in that you to in

       the classroom, don't think when you're sat there in

       the classroom that it's all a load of rubbish."

JL3: "Pay attention to everything you're told, if you

       don't, when you come out on the exercises, if you

       don't pay attention you haven't got a clue: what will

       you do out here? 'Cos you don't know how to do your

       orders, how to tell people what to do, how to carry

them out - so if you haven't got that, you needn't
come out here."

JL4: "It's boring sometimes, like, in the classroom but
when you get out here, it's alright."

VN: "Thinking about that, do we have any choice but to
spend the time (in the classroom) the way we do?"

JL4: "No, because you got the easy tasks (microtasks), and
it teaches you and then you build on top of that, get
harder and harder, and then you build on to coming
here, and when you come here it just builds up
altogether, and you learn how to do it altogether."

JL5: "Don't get deceived by the small tasks in the
classroom.."

JL6: "'Cos when you come out here it's totally different"

JL4: "You'll enjoy it."

JL5: "When you get the small tasks, it doesn't seem
important sort of thing, but when you come out here
it's a lot of space and more things are required of
you."

JL7: "In the classroom it's just learning you how to do
it, when you're out here you're putting it into
practice, what you've learnt in the classroom."

JL4: "You realise why you did the small tasks, you realise
what they were all for.. if you didn't do all the
small tasks to begin with, and came straight out
here, you wouldn't have a clue what to do."

I think that says it all.

As I said earlier in the feedback section, the focussing

of attention among Junior Leaders, led to some unexpected

outcomes in their training withn the Junior Leaders'

Regiment, Royal Corps of Transport - the anecdotal

evidence for which, I should like to discuss at this

point.

The first anecdote concerns a Junior Leader's behaviour

whilst on Adventure Training in March 1986. In order to

liven up the two-day expedition phase where the Junior

Leaders navigated a route across the Brecon Beacons,

Captain Adrian Rowe, a new officer appointed to run the

Adventure Training Wing of the Regiment, decided to

accompany a group of Junior Leaders on their walk.

In order to liven up the experience, as a graduate of

Rowallan Company at Sandhurst, he decided to introduce a

crisis into the walk, ordering one of the party to

simulate exposure symptoms. The conventional casualty

-care procedures were carried out. To his astonishment,

the leader ordered the team to shelter themselves and make

tea whilst he disappeared. The team seemed quite happy

with this arrangement, making tea whilst Adrian fumed!

Thirty minutes later, the leader reappeared and led them

to a simple model of the area, and to Adrian's disbelief,

confidently began a systematic task presentation, an "O"

(Orders) group, in all its stages through to confirmation

and rehearsal, something which was expected at Sandhurst

from Officer-Cadets on tactical exercises, but not from

Junior Leaders on a remote Welsh hillside.

Another anecdote concerns Junior Leaders' expectations of
their leaders when presenting tasks. In September 1987,
as part of the nationwide Home Defence exercise, training
units were brought into the contingency planning for
dealing with Soviet "Spetznaz" commando attacks upon
strategic installations within the United Kingdom.

Two Squadron commanders, decided to brief their
Junior Leaders en masse, instead of briefing the troop
commanders and then letting them personally brief their
Junior Leaders. Both squadron commanders decided to tell
the "story" of the exercise instead of using the
recognised Orders ("O") group system of systematic task-
presenting. In both cases, they were disquieted by the
murmurs and head-shakings of the Junior Leaders. Troop
commanders and warrant-officers subsequently took both
squadron commanders aside, and delicately explained the
loss of professional credibility in the eyes of the Junior
Leaders, which had come about in their failing to use
system correctly, and trying to "cuff it".
The "currency" of these anecdotes was sufficient to lead
toward a change in the relationship between adult troop
staff and Junior Leaders in training, after they had
completed their macrotask exercise. The new expectations
of troop staff meant that it became possible for troop
staff to selectively abandon their largely mechanistic
custodial role vis-a-vis the Junior Leaders, and to plan

the delegation of exercise and everyday logistics and
administration to individuals, rotating these
responsibilities among the Junior Leaders. The fastest
converts to this approach were those troop staff who had
acted as Directing Staff on the macrotask exercise, and
who had appreciated abandoning the custodial role for that
of information-source, feeling that this at last
acknowledged their experience and training in the Adult
Regular Army. This change involved thinking ahead,
scripting training situations with appropriate data in the
proper "O" group task-presenting format, but the pay-offs
seemed worthwhile. This meant (in Transactional Analysis
terms), the possibility of being selective in being troop
staff "parent" to Junior Leader "child", and consciously
introducing their "parent" and occasionally their "adult"
to Junior Leader "adult".

The Full-Scale Tasks, The Macrotasks.

In the next diagram, I have represented the arrival and departure of the full-scale problems which became the macrotask repertoire in seven phases beginning in 1982. At first, a full-scale problem differed from the Command-Tasks's barrels-and-planks approach in a matter of scale and purpose. In 1982, the Command Task, the prepared talk, and the full-scale task briefly co-existed together. Until phase 3 (January 1983), the full-scale task was used as a kind of seminar problem, with each stage of processing from original task-presentation through to final feedback being monitored and controlled by an instructor; with an accent upon dealing with each step in the process (as it was then) by confirmative discussion, with lip-service paid to the relief of action to resolve the problem, at the end of the session.

By phase 3 (January 1983), the system of individual macrotask briefings prior to the exercise, on macrotask locations had been fully implemented. The frequency with which each macrotask was exercised, varied with the phase of development. By phase 3 (January 1985), each full-scale problem or macrotask was being carried out at a minimum of 108 times per annum. (Calculated at an annual rate of 18 troop exercises, with a minimum of 6 x 5-man teams.)

The individual sequencing of macrotasks, and allocation to students, was determined by the need to reduce the amount

Diagramatic Representation of Macrotask History

```
                          Phases
                          Dates: month/ year of introduction.

                          1    2    3    4    5    6    7
                          2/82 5/82 1/83 2/84 6/84 1/85 1/86
Macrotasks:

1.Snatch (SN)             1-----------------------------------

2.LX (pool)               1---lido--MPL------------Summer/only


3.Search (S)                   2-------------------------------

4.Hide                         2----X


5.Bridge Blow (BB)                  3------------------------

6.Ferry Raft (FR)                   3------------------------


7.Mine Map (MM)                          4------------------

8.Cross The Gap (XTG)                    4------------------


9.X Task (X)                                  5-------------


10.Flying Bomb (FB)                                6--------.-

11.Recovery Trawl (RT)                             6---------


12.Demolition Lift (DL)                                 7----

13.Message (M)                                          7----
```

Linear Night Navigation Exercises:
                      2/Wansdyke
                          3/Offa's Dyke
                              4/Orientrox

    Key:

    lido = concrete-lined pool on East side of B4234, at
    GR 609.125 (O.S. map 162)

    MPL = Mallard's Pike Lake, GR 638.093

of time spent navigating between tasks, and avoid over-
concentration of teams at particular locations due to
delays in completing feedback by the Directing Staff
attached to each team.

The Snatch (SN)

One of the original full-scale tasks, the "Snatch", was
carried out on and around the location of an abandoned
house on the airfield at Colerne.
In its original form, it involved the snatching of a
terrorist hiding in the building, who had no personal
weapon, but who needed at least 90 seconds to warn his
cell over his radio system.
The students were provided with a diagram detailing the
layout of the building on both floors, the approaches and
exits. The team were also given access to a four-ton
lorry and driver, and Self-Loading Rifles (SLRs) with
blanks.
The team had to have the terrorist out of the building and
into the truck within two minutes.
The problems within this full-scale task were relatively
simple, revolving around the two basic problems of the
building and the terrorist.
The Building:
1   The approach - timing, method and direction.
2   Security - how do you secure the building's exits?
3   The search itself - how do you search this building?
4   Control - how do you maintain control of the team

during the search?

5   The exit.

The Terrorist:

6   Security and control - when you find him, how do you

     get him out quickly without hurting him?

7   Contingencies - what do you do if he's not there or

     there's more than one, or someone gets hurt?

This full-scale problem was a useful medium for teaching,

since it made legitimate the process of looking at the

task, evaluating the factors into positive and negative

factors and acknowledging that there were areas of

darkness within the problem which could not be resolved

without actually looking at the target environment itself.

The evaluation of alternative courses open was relatively

simple, given the limitations of the scenario.

The plan's basic structure was however implicit within the

title of the full-scale task. The Junior Leaders enjoyed

the role-enhancing "circus" aspects of the task as well.

Lake Crossing (LX)

The Lake Crossing was derived from an observational

exercise contrasting the experiences within, and

relative performance of two 4-man teams with different

types of leadership. The task observed, took place in the

camp swimming-pool and involved the construction of a raft

and the ferrying of teams, from one end of the pool to the

other. At the end of the task, both teams and leaders

were interviewed, and the relative merits of autocratic

and democratic styles of leadership were collated by the
interviewing students. This task was later transformed
into a final, end of exercise task, dependent upon the
leader successfully learning and practising a water-
proofing technique. This technique transformed their
rucksacks into floats, which together, could support a
casualty across a water-obstacle.

The leader then had to teach the team via demonstration
and rehearsal. The knowledge that all their personal
exercise equipment could be soaked, by failure to observe
the technique, was a useful factor in ensuring the
leader's motivation at the original briefing, and
attention to quality control during the task!

It was the unscheduled demolition of the building by the
Property Services Agency, together with the pool-
maintenance complaints about our tainting the chlorinated
water system, that forced me to consider moving the
training day into another environment.

In phase two, I moved the training day into the
Forest of Dean. This phase involved 7-man teams, each
individual being briefed separately (and given a task file
with all the data, photographs, and diagrams) for his own
leadership task, in a classroom, prior to the exercise.

The idea was to give him information-power, and thus
a real motive for using the information-processing systems
taught within the classroom, followed up by his
accompanying DS debriefing him upon his performance in

terms of Leadership Performance DB (3).

In other words:

TASK   - AFCOP - at least one Course Open.

           - model/GSMESC + confirmation/rehearsal.

ACTION   - concern for location, control, response, time.

PERFORMANCE

DEBRIEF   - results, team's comments, learning points.

Apart from the traditional navigation problems along a linear feature (the Wansdyke), a shelter construction in silence, a water obstacle-crossing requiring use of a specialist survival skill to cross with a casualty; the next significant full-scale problem I developed, involving the learning of an instrumental procedure (like the Lake Crossing), was the Search task.

The Search (S)

The "Search" involved a scenario where the team has to recover a contaminated casualty to a helicopter Landing Zone (LZ) for evacuation within a time-limit. The contaminated casualty is known to be within a particular defined area which may also be contaminated by his presence. The problem requires that the LZ fulfills particular design criteria in order that the special helicopter ambulance can land and exit. Nuclear, Chemical and Biological (NBC) warfare suits, decontamination kits, respirators, two ponchos and string are provided. The leader has to resolve several major sub-problems:

1   Does he split the team into two sub-teams?: one, to

carry out the search, the other to locate, construct and mark the LZ?

2   How does he search the area?

3   How does he control and communicate with the searchers within the potentially dangerous environment? - the NBC suits and respirators severely limit communication between team-members.

4   How does he carry the casualty? Does he make a stretcher and test it before he even enters the area?

5   If 1, how will the searchers know where the LZ is? Should the LZ party rendezvous near the search area when their task is done?

6   Should the complete team set up the LZ first, then move into the search area together, sharing the load of the casualty on the move to the LZ?

Whatever the leader decided, he had to communicate his plan in depth, and in all its detail to the team, often having to physically demonstrate and rehearse what it was he wanted to happen. And once the TP was over, he had a deadline to keep within the task.

The beauty of this problem was that failure to deal with all of these implicit sub-problems invariably led to conflict within the team, conflict which was very fruitful in emphasising the preliminary use of system to look at the task in depth.

Ferry Raft (FR) & Bridge Blow (BB)

In Phase 3, I abandoned the shelter task (we'd built
enough of these semi-permanent underground hides within
the Forest of Dean, and I didn't want to antagonise the
Forestry Commission), and introduced two new tasks: the
Ferry Raft and Bridge Blow. The Ferry Raft required the
construction of a raft out of three beams, two oil drums,
four small empty, plastic 25-litre drums and two 20 metre
lengths of hawser-laid rope. The task had a time-limit
which came into force when the TP was over. The problem
was fairly mundane, requiring the team to construct the
raft and then cross a 100 metre span of water. The
equipment meant that only two design options were viable:
a "T", or a triangular frame, and the use of simple
lashing techniques like the clove hitch, all of which were
taught to the leader during his briefing, prior to the
task.

The Bridge Blow task was closer to the Search in its
initial apparent simplicity which, when analysed, revealed
a depth of contingent detail that sometimes left students
in despair.

The task required that three simulated explosive charges
were suspended, equidistantly, in contact with the arched
ceiling of a tunnel under a railway embankment. These
explosive charges must explode simultaneously, using as
simulated fuses, three 12 inch sparklers. The team were
provided with a length of rope or tape, matches, solid
hexamine fuel cubes and a folding cooker. Within ten

minutes of entering the task area (a circle including all
the ground up to 20 metres around the target site), the
task must have been accomplished.

The beauty of this task's design was that all the
necessary operational information was included within the
scenario script, but the consequences of the arch's
specifications and the necessary ignition procedure was
only evident once a model of the target was constructed,
and the courses open tested out, often leading to a plan
that was an amalgamation of different bits of different
courses open.

It was the dependence upon correct sequencing in this task
and its predecessors: the Search and the Snatch, that led
to the decision to formalise the Tactical Thinking concept
as a necessary precursor to the construction of Plan-
Grids.

At this point, I began to think about the need to brief
leaders on the actual task site, acknowledging that
students needed that extra reconnaissance of the task that
even exhaustive scripts, handling the equipment, diagrams
and even photos couldn't match. By Phase 6, this had been
achieved and the navigation tasks along linear features
had been abandoned. The decision to abandon the
navigation tasks was a product of putting our learning
into practice. I reviewed the training with my assistant,
Sergeant Philip Stonier, and looked at each activity in
terms of the course's stated aim. We found that this

aspect of the exercise was useful in terms of team-building and developing confidence in leading a team cross-country along a linear feature, but that the map-reading skills aspect predominated. It was not <u>directly</u> doing what we wanted it to do in the precious training time we had to play with.

Mine Map (MM)

In phase 4, I introduced a task which I felt duplicated the concurrent activity potential of the Search. I felt that there was a need for another task which through complexity and time-limitations enforced the effective briefing of two teams out of one; with some contingency and report planning which of necessity would require teaching and rehearsal. The Mine Map task deliberately gave the leader two tasks which could not be completed without splitting the team.

The task leader was faced with a series of problems: he began the task at junction of three tracks, the first of which he has just arrived by, the second of which is definitely known to be mined and partially overgrown, and the third track which may be mined.

At the end of the second, mined track there is another track junction, which is the rendezvous point for a party of charity walkers who must be given a map of a safe route from the rendezvous to the HQ of the charity organisers. The team must also locate, map and classify all possible mines or anti-personnel (AP) devices along the second,

mined track and confirm that the third track is clear and
usable.

The lethal zone of these AP devices is known to be at
least ten metres.

After the TP is complete, the team has one hour to
complete the task, producing two maps:

1   An accurate map based upon graph paper showing the
AP devices' exact location plus drawings of types to
guide specialists in recovering the devices.

2   An unambiguous map with accompanying detail to guide
the walkers to the alternative rendezvous (RV) at the
charity walk organisers' HQ.

Very quickly, the task leader realises that there is just
too much to be done in the limited time and splits his
team into two:

The AP searchers (along route 2), and the alternative RV
party.

The alternative RV party have to appreciate the criteria
for a successful map which can be used by the walkers,
agree upon a reporting point to rejoin the team (usually
the original RV point), and have some idea of what to do
if there is an accident. They depart with the only map in
the team, moving gingerly along the third track to begin
their reconnaissance and mapping of the alternative route.

     Meanwhile the AP search team, have to learn their
roles, and standard operating procedures (SOPs).
Generally the task leader adopts a linear formation of

single file due to the path being partially overgrown and winding at some points, he creates distinctive responsibilities for each team member:

1   Point searcher.

2   Pacer.

3   Recorder.

4   Controller.

Beyond phase 6, the microtask teaching system was concentrated into a three day session, completed by the macrotask exercise. We were operating teams of five students, each student leading one macrotask per day, two macrotasks within the 36 hours of the exercise. This meant that for a five-man team, there were only three men in an AP search team. In effect there were at least four jobs and only three men, three men who would be spread out over a distance of at least 20 metres along the track, the leader unable to see the searcher at the front, a searcher who determined the pace and accuracy of the search from the front and yet the leader had to go last in order to deal with contingencies.

If casualties were sustained, the leader (if he was still alive) had to rethink the situation, either carrying on the AP search with reduced numbers, calling back the alternative RV team from their own reconnaissance, or abandoning the AP search altogether.

This task was really about creating your own standard operating procedures (SOPs), learning them, and the problem of control.

The extra spice to the task is the existence of
armed but simulated, pressure and spring trip devices
which when triggered make a loud bang and release a cloud
of black-powder smoke!

Cross The Gap (XTG)

The second task introduced in phase 4 was the Cross the
Gap (XTG) task. Unlike the Mine Map task, XTG is a purely
logistics, teaching and rehearsal problem. The team and
all their equipment (which usually takes the form of
rucksacks or barrels of water) have to cross a 10 metre
gap in a railway embankment where a metal railway bridge
used to stand, within six minutes. Two horizontal ropes
span the gap, secured under pressure. The team (of five)
and all their equipment have to cross the gap, attached to
both ropes (standing on the lower, and holding on to the
upper). Team-members must be secured uniformly to both
ropes via two rope-slings and two carabiners, both of
which are attached to a carabiner on a climbing-belt: the
rationale being that if one of the ropes snaps, the other
will secure the team-member from falling.
The team is allowed just the one attempt.
Only sufficient crossing kit is supplied for two team-
members to cross at one time, plus a spare carabiner, 45
metre rope, and an 8 foot sling. The personal equipment,
if rucksack are used, must not be worn as the combination
of rucksacks, springy horizontal ropes, and simple
climbing-belts can mean a team-member turning upside-down,

and hanging helplessly until a DS crosses to him, and

releases him from his rucksack!

These limitations require an analysis of the task into

four distinct types of activity:

1   Individual crossings

2   Kit recovery for further crossings

3   Preparation of personal equipment for crossing

4   Launching and recovering personal equipment.

An unfortunate aspect of this task lies in the tendency

for the task to enforce a kind of functional fixedness

through its tight definitions of safety; however, this is

more than offset by the beauty of the problem's

susceptibility to solution via modelling and TT.

The problem of individual crossing is relatively simple,

the leader can demonstrate and fit the equipment on

individual team-members during his TP. The problem of

recovering the crossing-kit for subsequent crossings is,

however, primary; the 45 metre rope (150 feet), the spare

sling and carabiner are usually sufficient hint for the

leaders to develop a shuttle pulley system, tying a loop

in the middle of the spare rope which is then clipped onto

the lower or upper rope, with both ends of the spare rope

secured to trees on either side.

When the first two activities have been developed, there

only remains the last two: the preparation of the crossing

kit by being moved to the launch site on the start side is

easily achieved, and the spare sling can be threaded

through rucksack straps or integral water-barrel handles,
then attached to the shuttle pulley. Consideration of the
fourth activity requires rehearsal to fully appreciate
implicit difficulties - the five personal loads are heavy,
requiring a minimum of two shuttle-loads, and at least two
members to recover each load on the far side.

A systematic approach will yield results in a full
appreciation of all the factors. During the briefing of
the macrotask leaders on this task, the leaders are
encouraged to actually cross the gap, and experiment with
variations in phasing. The task is best represented by a
working model with pieces of paper, twigs and string
representing the factors. Working through the phases with
the models, modelling the sequence allows the full TT
appreciation to be savoured. Once a satisfactory sequence
is achieved the TP is helped by the use of the model to
explain the PG, and to confirm detailed understanding.

This understanding needs to be rehearsed, and rehearsed,
until it can guarantee a fast time. This macrotask can
serve as a most chastening example of the usually
underrated difference between knowing a procedure, and
being able to carry it out.

The record time of five minutes and twenty seconds, for a
team of five was achieved through rehearsing seven times.
This problem cannot be achieved without a ruthless
concentration upon rehearsal and teaching, until the
leader is absolutely sure that standards are sufficiently
high to make an attempt worthwhile.

I often felt that it was a shame that this problem couldn't be used as a bridge between the microtask and macrotask phase because of its clear definition of the systematic approach; it deserved I felt, to stand on its own to draw out the lessons learnt and in order to be fully appreciated. This was due to its being a more powerful macrotask within its natural setting (over a steep drop, within a forest), and in its anticipation by students as one of the more intellectually testing macrotasks on the second day of the exercise.

"X" - Task (X)

Phase 5 saw the arrival of the "X" task. This was a product of attendance at a Leadership Trust development course at Symonds' Yat West. I was impressed with David Gilbert-Smith's professionalism and the games that were played on the outdoor industrial management playgrounds on the banks of the river Wye. I was particularly interested in the setting up of industrial processes which had to be serviced in the correct order to produce a product. Although the product was usually coloured water, and the learning rather vague and thematic, emphasising management style with no development of what I would term "hard" systematic approaches; the macro-problem ingredients of an inter-dependent team with different roles, working together to service, co-ordinate and maintain a product in the face of an uncertain environment, looked worthwhile. The "X" task involved the recovery and neutralisation of

containers of unstable liquid explosive. The liquid explosive consisted of six water-filled plastic barrels hidden within a defined area. The neutralisation of the explosive liquid involved a specific procedure: the sensitivity of the explosives meant that once moved, all the containers had to be submerged via a marked entry point in a pond within the search area, within two minutes for a period of three minutes (plus or minus ten seconds). Finally, the six containers must be recovered via a marked exit point on the other side of the pond, covered with a poncho and kept still for one minute. Also within the search area, apart from the pond there is a variety of bushes, trees and small re-entrants, wooded gulleys and several ditches and streams; plus a gutted one-room pumping-building with a floor that is described as too dangerous to stand upon. Unknown to the team, sometimes up to two barrels are sometimes suspended from the rafters in this building with the dangerous floor! The macrotask leaders are briefed to bring a poncho and at least 20 metres of nylon cord.

Initially the macrotask can be categorised into several predictable phases, which can themselves be developed with the TT tool:

1   Administration   4   Action

2   Search   5   Withdrawal

3   Rehearsal.

Consideration of an administration phase allows the leader

to reduce the amount of post-search organisation or

action-phase confusion to a minimum, for instance: he can

usefully place the poncho on the exit side of the pond,

pre-place the nylon cord by tying it to a tree on the exit

side and throwing it over the pond to the entry point,

pre-place long sticks at the entry point to help submerge

the barrels, all of which removes the need to coordinate

that part of the action phase when the team is already

chasing its one-minute deadline.

The search phase duplicates the control aspects of the

original search task, but like the Mine Map, with the

added need to record information from the team as it

discovers the barrels: unless a system of recording is

formalised so that a barrel's location is reported to the

leader and marked upon a sketch-map, we often see the team

continuing the search with a leader under the impression

that, collectively, the team has still one barrel to find.

A built-in crisis element of the "X" task is the location

of barrels within the roof of the building. These are

secured out of sight, above eye-level on a pulley system.

The team only looks into the roof, through the windows,

after finding all the other barrels and after re-sweeping

the area a few times, an atmosphere of defeat and

uncertainty surrounding the leader, which is resolved by

the discovery. The team immediately surround the leader

and swamp him with suggestions, at this point he has to

slow the team down, and take a time-out phase, sitting the

team down and going through all the options whilst still maintaining control.

In the third phase, rehearsals are needed to simulate the action and to check the viability of the recovery of the heavy barrels to the entry point at the pond, this sometimes leads to a redistribution of personnel to barrels according to the difficulty of moving across some of the ground or recovering any barrels from the roof-beams of the building without touching the floor (which is a problem in itself, needing two team-members). In a conventional macrotask team-strength of five, the leader usually allocates two men to the barrels in the building, and is left with the dilemma of four barrels and three men (including himself) to deal with four heavy barrels. At this point the leader has to balance the priorities of control and involvement in the task, and decide whether he should get physically involved in the task without losing control.

The leader cannot rehearse recovering the barrels within the house, he signals the start, and starts counting off the seconds.

If an action-phase has had the preparation suggested as necessary within the administration phase, the 2:3 (+/- 10 seconds):1 sequence runs smoothly. Without this preparation, the task of neutralising the explosive barrels leads to individuals having to jump into the water at the entry point to hold the barrels together and bring

them across, a spontaneous response born out of chaos,
whose futility is usefully underlined in cold water!

The "X" task usefully combines the need for modelling and
TT in the development and presentation of the plan. The
PG can be explained and confirmed on a model, and in the
rehearsal phase, the allocation of personnel to barrels is
clearly indicated. The model also allows the leader to
use TT in reverse, in other words he can model the task
achieved - with barrels under the poncho on the exit side,
and work backwards to the submerging of the barrels,
seeing the preparations which could be made to reduce the
problems at the beginning of the recovery within the
action phase.

It confirms the usefulness of the logistic aspects of
developing a plan through TT, but is unusual among the
macrotasks in having a deliberate built-in crisis where
the leader is swamped with data and initially loses
control. I began to realise that the product-processing
design theme of this task could be used in designing yet
another task.

The beginning of phase 6 saw a review of practice and
logistics. In order to reduce the amount of time
wasted moving across an exercise area of 20 square
kilometers over two days, and the difficulties of briefing
task leaders upon their task locations over such a wide
area, I began (with Philip Stonier's help) to think about
concentrating the exercise into two distinct areas:

Day 1 Area: 2 square kilometers

X-Task, Bridge Blow, Ferry Raft, Mine Map.   (4)

Day 2 Area: 5 square Kilometers

Lake Crossing, Cross the Gap, Snatch, Search. (4)

<u>Total operational macrotasks = 8.</u>

One of the consistent macrotask debrief points from the
Junior Leaders had been the need for consequentiality - in
other words, they wanted a task or series of tasks which
were in the product-processing design theme, but which
would involve a signal recognition of any failure to
process the product with due care. Specifically, they
wanted something which would go "bang!" if they made a
mistake. It was significant that the Mine Map macrotask
was done best in semi-darkness, with a heightened
awareness of the problems of control and monitoring with
limited light-sources.

Flying Bomb (FB) & Demolition Lift (DL)

Since we only had eight macrotasks, and we wanted to
reduce teams from six to five, Philip Stonier and I began
to think about developing the two necessary macrotasks to
bring us to a total of ten, allowing a student to lead two
macrotasks over two days.

The result of our joint efforts was a deliberately
sequenced macrotask based upon a joint design which we
called the Enhanced Pyrotechnic Device (EPD: Annex F.1-9)
The new macrotask was called the "Flying Bomb", and

involved the leader in a TP which led onto a rigorous

teaching session followed by rehearsals, and then a move

to a preparatory area for final administration, followed

by a coordinated, controlled operation. This coordination

involved

1   safely arming a simulated explosive device, which was

then

2   lowered on pulleys down a wire cable, across an

artificial amphitheatre to a mine-shaft entrance.

3   During the lowering of the device, its rate of

descent must be controlled, so that

4   the wire which initiates the explosion is not

inadvertently pulled or snagged.

5   Factors 1-4 all involve coordination of the relative

tension of two wires and one cable, during a fitting to

explosion time of only five minutes.

This macrotask was deficient in the application of most of

the Factors and Courses Open parts of the AFCOP. We had

to reduce the options in order to make the task safe and

predictable, this task had to be manned by either myself

or Phil Stonier at all times. The individual arming the

device had to wear safety-goggles, whilst the rest of the

team had to keep the device stationary on its pulleys, and

remain at least five feet away.

At all times the team were subject to supervision of the

presiding safety officer who could at any time stop the

task, and rearm the device. Over a period of 800 firings

over two years (including initial safety demonstrations,
use on the Mine Map macrotask and other unrelated
demonstrations and exercises), adherence to the safety
drills meant that no individuals suffered any injury
whatsoever.

This macrotask concentrated more upon the development of a
coordinated plan which everyone had to understand, and in
which everyone depended upon everyone else. Once a
responsibility was delegated in this macrotask, the team
fully understood the need for clarity.

A combination of this device plus some elements of the "X"
and Bridge Blow macrotasks, led to another development in
phase 7 - the Demolition-Lift (on day 2), which involved
the task-leader using the leader of the Flying Bomb task
(from day 1) as a specialist technician with the same
device to initiate another explosion at the culmination of
a complex sequence involving the fitting together of
weighted, coded elements into a cage, the construction of
a pulley-system, and the lifting of the cage within a
time-limit. This task duplicated some of the AFCOP
weaknesses, in not really allowing much opportunity for
developing radically different Courses Open, but had
considerable strengths in its dependence upon the
communication skills aspects of TP, use of models for
teaching and training, and a strong element of
consequentiality if mistakes were made or task processes
misunderstood.

Recovery Trawl (RT) & Message (M)

The second phase 6 macrotask was the Recovery Trawl (RT).
The prime motivation for its design and introduction was
the location of the Lake Crossing (LX) macrotask at the
bottom end of the day 2 area, almost two kilometres away
from the other day 2 macrotasks. In order to make this
journey down to the LX more useful, I developed this
macrotask.

Essentially, the task involved three phases within
an action time of 45 minutes:

1   Stretching a rope across a pond with an island at its
centre using tall trees on either side, and sending an
individual across this rope to drop onto the island and
recover a special device.

2   Recovering a buoy from a nearby lake, (using a long
rope to trawl across it) a buoy which is marked with a
magnetic bearing from a lifebuoy stand, to a concealed
culvert where the device may be safely stored.

3   Walking an individual along the magnetic bearing
until he finds the culvert (made more difficult by the
bearing crossing the lake before it reaches the culvert).

This macrotask followed the split-tasking elements
of the Search, and the Mine Map.

In phase 7, we developed a distinct summer phase, and the
LX and RT became summer-only tasks allowing day 2's
exercise area to shrink from 5 to 3 square kilometres. The
other winter replacement task (along with Demolition Lift)

became the "Message", which involved four phases:

1   Trawling for three small buoys which together make up

a grid reference for a recorded message.

2   Locating the message on a map, moving to it,

recovering and noting the message.

3   Acting upon the message, which requires that the team

use the criteria of Search task's LZ to correctly select

and mark an appropriate helicopter LZ,

4   Communicate their choice of LZ to the Exercise HQ.

Operational Macrotask Analysis.

As I said at the beginning of this Chapter, the full-scale task was designed as an intermediate stage between the command task and the tactical exercise, practising the use of simple PS and TP structures. After the 1984 INSET, the macrotask definition became more specific as a real time-problem which:

1   requires the leader to deploy his complete PS and TP approach.

2   Is not designed upon hidden success criteria, or based upon knowledge of a particular physical trick (if a trick or specialism is required, it will be taught to the leader before the task, as a medium of learning).

3   Operates as a means to and end, the end is one of systematic PS and TP.

4   Is offered to one individual to process for his team.

A review of the macrotasks in terms of what they contain and what they make students do, can be broken into three main areas of planning, communicating and controlling, a neat way of summarising the dynamic operational processes intentionally built into the macrotasks (see page 6.46 overleaf: "Significant Factors involved in Macrotask Design").

Within planning, the two significant factors present are what I call "implicit product-processing" and "team/task splitting". I use the word "processing" within the industrial context of a series of operations which result

Significant Factors involved in Macrotask Design

Macrotasks:

Planning

	SN	LX	S	BB	FR	MM	XTG	X	FB	RT	DL	M
1 Implicit Product -Processing	o	ot	o	o	ot	ot	t	o	o	o	o	t

      o = object processed and delivered: casualty,
      terrorist, equipment.
      t = team processed.

	SN	LX	S	BB	FR	MM	XTG	X	FB	RT	DL	M
2 Team/Task Splitting			x		x		x		x	x	x	x

      (due to need for concurrent activity in several
      areas because of a conflict in priorites)

Communicating

	SN	LX	S	BB	FR	MM	XTG	X	FB	RT	DL	M
3 Skill-Teaching	x	x	x	x		x		x	x			
4 Process rehearsal -Dependence	x		x	x	x	x			x	x		

      (apart from use of a model to confirm)

Controlling

	SN	LX	S	BB	FR	MM	XTG	X	FB	RT	DL	M
5 Consequentiality	s	s	c	d	s	s	d	d	s	c	c	d

      d = failure is defined by task criteria alone.
      s = failure is signal & unambiguous: raft collapses,
      simulated explosion heard.
      c = failure can be both by signal and by task
      criteria, or by either.

	SN	LX	S	BB	FR	MM	XTG	X	FB	RT	DL	M
6 Crisis Potential	x	x	x	x	x	x	x	x	x	x	x	x

Key: SN (Snatch), LX (Lake Crossing), S (Search), BB
(Bridge Blow), FR (Ferry Raft), MM (Mine Map), XTG
(Cross The Gap), X (X-Task), FB (Flying Bomb), RT
(Recovery Trawl), DL (Demolition Lift), M (Message).

Note the direct similarity between SN and FB, and the
closeness of S with a "c" in Factor 5, instead of just an
"s".

in a product or change. All the macrotasks implicitly
contain this element of product-processing. The object
processed can vary from task to task, being either the
team, an object or collection of objects outside the team
or in the negotiation of an obstacle.

An aspect of this processing is an element of risk or
crisis, common to all the macrotasks (factor 6, p6.46).
This built-in potential for crisis is linked with the
design ingredient for signalling its approach, the
macrotasks' potential for what I call "consequentiality" -
for unambiguous, signal failure showing the result of a
lack of control within a task. I have defined this
consequentiality in terms of failure either in terms of
interpreting the macrotask scenario, or in terms of an
unambiguous signal, like the collapse of a raft, the
premature detonation of an armed device, the bang of a
simulated pressure mine (5).

Seven out of the twelve macrotasks reviewed, require the
delegation of separate priorities to run concurrently,
usually in the form of two teams, a design factor which
links three macrotasks together (SN, S, FB) with the
explicit demonstration and teaching of instrumental task
skills to the resulting sub-teams, and accordingly with a
need to confirm this understanding and ability to perform
adequately, through rehearsal.

Profile Analysis Leader Skills (PALS).

The idea of "profiling" the macrotasks was the product of

reading the FEU (1982) review of student profiles and a

post-exercise feedback session at the beginning of the

fifth phase (June, 1984). A student had been unhappy

about the random way in which he had been allocated his

particular pair of macrotasks. When I asked him to

explain, he said that with the advantage of hindsight, he

felt that he would have been more effective as the leader

of two specifically different macrotasks, which he had

experienced in the role of team-member.

I did point out that this might be a product of

difference in perspectives, that as an intelligent and

trained "follower", he was probably just experiencing a

perspective-shift which allowed him as a "follower" to see

options to which the leader of a task was blind due to the

extra pressures of just maintaining his role. I was

intrigued, and asked him to characterise the differences

between the problems as allocated, and those he would have

preferred to have led. He couldn't really do this; when

we asked everyone how they saw it, this difference was

apparently a combination of

1   Perceived relative difficulty,

2   Individual temperament, and

3   Problem-design.

At this point, my mind went back to the post-exercise

review at Burnham Beeches in 1984. A result of the

exercise had been a useful list of skills, which it was felt could be operationalised in future micro/macrotask developments. I looked at the skills and saw that they were almost cyclical, in terms of a process for handling a problem. By adding two skills to the original list (Tactical Thinking and Performance Analysis), I felt that I had a potentially useful process tool for analysing a problem's handling from inception to completion and review of the team's performance.

The result was a taxonomy of ten skills, which were neither clinical nor exhaustive.

Profile Analysis Leader Skills (PALS) Identification.

Essentially, the idea is for each observer to assess each macrotask's relative need for these ten "skills" to be exercised in order to complete the macrotask, successfully. This requires the observer to consider the macrotask in terms of these ten areas of skills operation.

1/10   Problem-Definition (PD):
         What is the priority in this situation?
         What is the problem?

2/10   Situation-Analysis (SA):
         How big a problem is it?
         Do We know enough, pros and cons?

3/10   Tactical Thinking (TT):
         What are the physical problems which in turn,
         have to be overcome to ensure success?

4/10   Solution-Framing (SF):

Setting up alternative actions, and selecting
the best method. (Can include modelling the
problem.)

5/10   Task-Framing (TF):
Organising the logistics, sequence and timings
of actions; e.g. Plan-Grid (PG) design.

6/10   Task-Presenting (TP):
Telling the team what to do: your plan.

7/10   Self- Presentation (SP):
Presenting yourself as a credible information-
source.

8/10   Team Control & Coordination (TCC):
Maintaining control and communications during
the task.

9/10   Crisis Recognition and Management (CRM):
Stopping the team action, if necessary and
replanning, redirecting the team.

10/10   Performance Analysis (PA):
Ask self and team, questions such as "what went
wrong?, what should we have done?"

These PALS skills form a cycle from beginning to process
the problem, through to having completed the task, and
reviewing it. The PALS skills are a functional compromise
between simplicity and utility, the product of three
phases of development.

The person completing a PALS proforma sheet does so from
the point of view of an observer, who assesses and scores

the macrotask in terms of how much of each skill is required, in their opinion, to complete the macrotask successfully.

The final version of the PALS scoring system involved the observer scoring the macrotasks at the end of the exercise, and not as originally designed at the end of each individual macrotask. This was a result of observing the tendency of the observer, who was also the team's Directing Staff, to confuse the purpose of the PALS sheet with that of the Macrotask Feedback proforma, and for PALS scores to reflect the leader's performance. I also noticed observers asking for new score sheets at the end of the exercise as they re-scored the macrotasks in the light of a more fully developed continuum of score values, having observed all the macrotasks.

Another experimental factor which had to be accepted was the pre-macrotask on-site briefing being given by different individuals over several exercises, where the only consistency was the written script, the macrotasks's location, and the time allowed for students to apply the processes and rehearse among each other, before returning to collect and lead their teams on their own macrotasks.

In dealing with the statistics, I was interested in acquiring at least 30 observers to produce a characteristic profile or skill-cluster for each macrotask. It would have been interesting and useful in terms of experimental design to have been able to ensure

that all observers followed the same macrotask routine; in other words, had approached each macrotask in the same sequence, but this would have meant turning the exercise upon its head. There was a limit to the amount of goodwill between myself and those involved within the exercise, it was felt that my experimental approach was sufficiently close to becoming an end in itself as it was, and several observers reminded me that I ought to bear in mind the real purpose of the training system that I had developed, and that was - to train.

I felt that the establishment of characteristic skill-profiles could lead to several useful things:

1   Provide some objective data as to the relative usefulness of individual macrotasks.

    For example, the 1983 INSET had shown the syndicates that there was often a gap between what the trainer designed a situation to teach, and the student's perspective of what the situation had actually taught him. In reality, he may find that his "designed" subtlety still only produces a subsistence-level of profile skills across the PALS range.

2   By viewing the present PALS approach as purely an initial step toward developing significant criteria by which we can usefully categorise training problems, and perhaps eventually produce a means of designing problems to fill gaps which may exist in our personal skills repertoire.

3   Establish characteristic patterns of skills for

particular macrotasks.

In dealing with the data, I accepted that the results

would be a closed universe of values, since the scores

for one macrotask related to other macrotasks, similarly

scored by the same respondent. To this end, I established

skills means for each macrotask (Table 1).

Profile Analysis Leader Skills (PALS)

Table 1: PALS mean values.

	PD	SA	TT	SF	TF	TP	SP	TCC	CRM	PA
SN	6.3	6.1	7	6.73	6.63	6.67	6.5	7.27	6.1	6.53
XTG	6.4	6.43	7.23	5.97	6.57	7.1	6.9	7.33	6.6	6.23
BB	6.53	6.17	6.7	6.33	6.23	6.47	6.27	7.07	6.77	6.37
LX	6.03	6.4	6.3	6.07	6.13	6.4	6.1	7.23	6.77	5.93
RT	6.5	6.93	7.1	6.23	6	5.93	6.13	7.07	6.8	6.1
S	6.23	6.07	6.2	5.53	6.17	6.03	5.87	7.03	6.03	5.57
FB	6.2	5.97	5.97	4.73	6.07	6.47	6.13	7.27	7.1	6.13
X	6.57	6.27	6.27	5.87	6.57	6.43	6.13	6.97	6.37	5.7
FR	5.67	5.8	6.2	5.83	4.73	5.87	5.6	6.9	6.37	5.33
MM	5.3	5.07	5.5	4.43	4.87	6	5.5	6.2	5.37	5.27
SD	.41	.48	.55	.71	.67	.38	.41	.33	.5	.43
Mean	6.18	6.12	6.45	5.77	6	6.34	6.11	7.03	6.43	5.92

I then compared the difference between the skills scores

for each macrotask with the average skill value across all

the macrotasks, for each skill.

I then internalised the values by converting the resulting

differences into standard deviations about the skill mean

(Table 2).

Table 2: Skills' Variation about the Means in SDs. (0 = mean)

	PD	SA	TT	SF	TF	TP	SP	TCC	CRM	PA
SN	.29	-.04	1	1.35	.94	.87	.95	.73	-.67	1.42
XTG	.54	.65	1.42	.28	.85	2	1.93	.91	.34	.72
BB	.85	.1	.45	.79	.34	.34	.39	.12	.68	1.05
LX	-.37	.58	-.27	.42	.19	.16	-.02	.61	.68	.02
RT	.78	1.69	1.18	.65	0	-1.01	.05	.12	.74	.42
S	.12	-.1	-.45	-.34	.25	-.82	-.59	0	-.8	-.81
FB	.05	-.31	-.87	-1.45	.1	.34	.05	.73	1.34	.49
X	.95	.31	-.33	.14	.86	.24	.05	-.18	-.12	-.51
FR	-1.24	-.67	-.45	.09	-1.9	-1.24	-1.24	-.39	-.12	-1.37
MM	-2.14	-2.19	-1.73	-1.89	-1.69	-.89	-1.49	-2.51	-2.12	-1.51

I then produced bar-charts which allowed me to compare the macrotasks' apparent usefulness, skill by skill, macrotask by macrotask.

These bar-charts were a useful graphic means of reporting back to the observers of the macrotask exercise and provoked some interesting comments upon the relative training usefulness of the macrotasks, from the observers' perspective.

Another purpose was served of reassuring those who had defended the marginally experimental nature of the PALS feedback analysis against the attack of its being purely academic: that I was going to share the knowledge with the people who had produced it for me - and that such information was functional.

A result of reviewing the data and its bar-charts was the realisation that

1   Each macrotask had its own characteristic profile in terms of skills-strengths and the emergence of different key, skills-clusters.
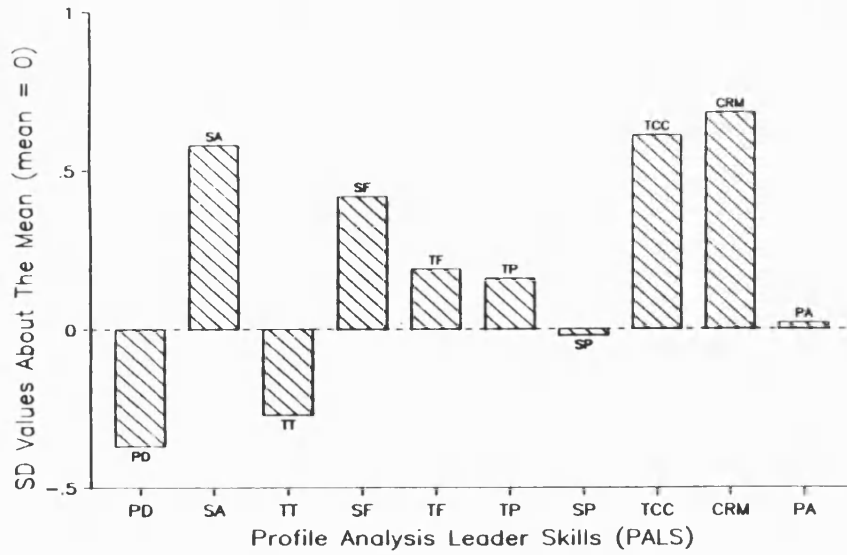
2   Several macrotasks had vague similarities in profile:
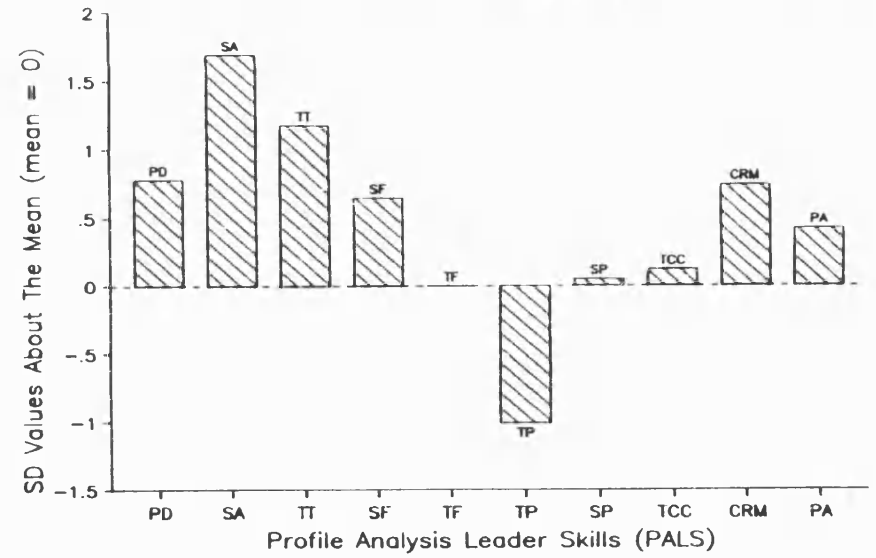
Recovery Trawl & Lake Crossing,

Ferry Raft & Mine Map

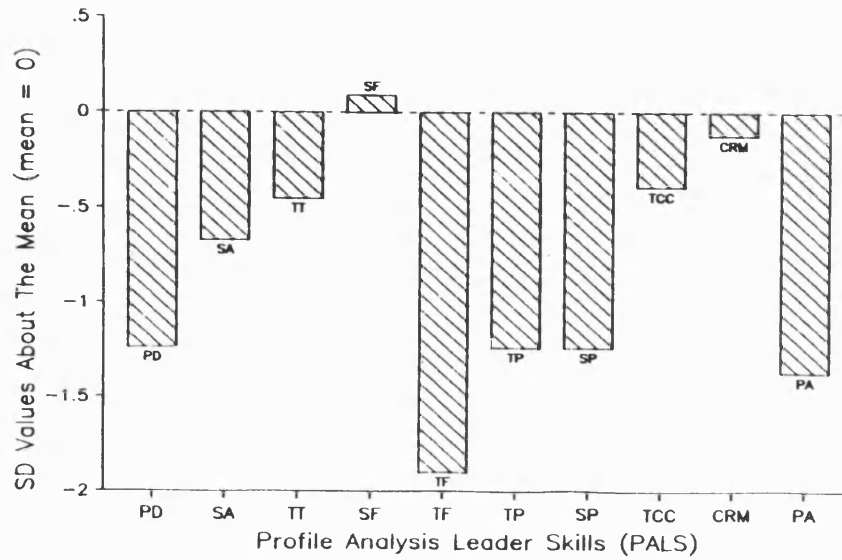(see Macrotask Profiles 4,5 and 9,10, page 255; overleaf.)

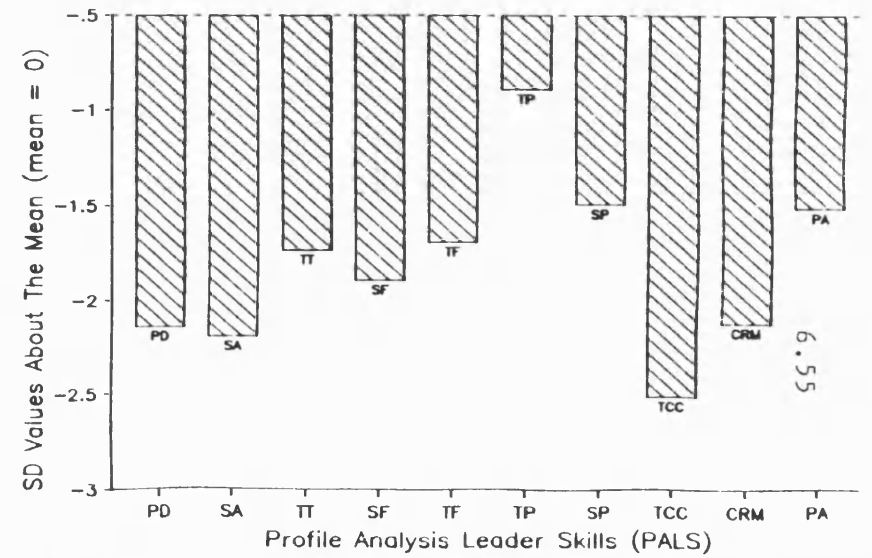Macrotask Profile 4: The Lake Crossing (LX)

Macrotask Profile 5: Recovery Trawl (RT)

Macrotask Profile 9: Ferry Raft (FR)

Macrotask Profile 10: Mine Map (MM)

3   A kind of pecking-order existed, where, although all
macrotasks provided some useful skills-deployment, some
macrotasks were clearly seen by the observers as more
useful than others in exercising profile skills (Table 3).

Table 3: Macrotask rank order in terms of relative skill SD values.

	PD	SA	TT	SF	TF	TP	SP	TCC	CRM	PA	Totals	Ranking
SN (2)	5	6	3	1	1	2	2	2	8	1	31	2
XTG (1)	4	2	1	5	2	1	1	1	5	3	25	1
BB (3)	2	5	4	2	4	3	3	5	3	2	33	3
LX (5)	8	3	5	4	6	6	7	4	3	6	52	5
RT (4)	3	1	2	3	8	9	5	5	2	5	43	4
S (8)	6	7	7	8	5	7	8	7	9	8	72	8
FB (6)	7	8	9	9	7	3	5	2	1	4	55	6
X (6)	1	4	6	6	7	5	5	8	6	7	55	6
FR (9)	9	9	7	7	10	10	9	9	6	9	85	9
MM (10)	10	10	10	10	9	8	10	10	10	10	97	10

For example, the Cross The Gap (XTG) macrotask offers
overall highest skill exercise value in the ranking table,
except in Solution-Framing (SF: see PALS 4, below) and
Crisis Recognition and Management (CRM).

PALS 4: SOLUTION-FRAMING
(mean = 5.77, SD = 0.71)
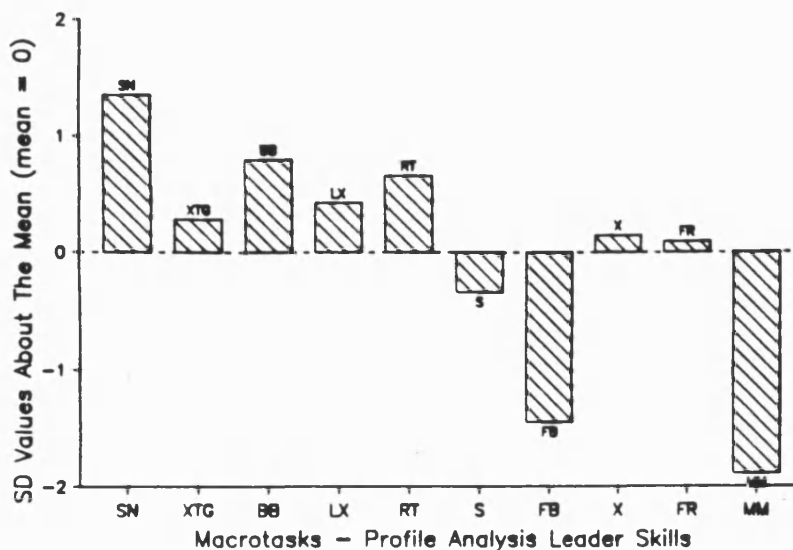
Apparently a low Solution-Framing ranking for XTG and
other macrotasks within the profile, is due to what is
seen as the designed lack of freedom within these
macrotasks to develop alternative courses of action due to
the script's deliberate limitations (also Search, Flying
Bomb, X, MM, Ferry Raft in PALS 4, on the previous page).

   The macrotasks' X, MM, and Ferry Raft, low Solution-
Framing position in the rank order (Table 3) links closely
with a low CRM ranking. This is seen as due to the
predictability of these macrotasks, in offering little in
the way of unforseen contingencies.
A low ranking for CRM (values 6-10: Table 3) tended
overall, to reflect what was seen as a macrotask's
inflexibility once launched into its action-phase.
PALS 9 (Crisis Recognition & Management) and PALS 8 (Team
Control & Coordination) on page 6.58, show relatively
positive scoring for XTG, BB, LX, RT, and FB.
These macrotasks all involve the team working together
a) on one site, and
b) managing a process to achieve the task, requiring that
each team-member is very sensitive to their key
responsibility to act together, within an sequence of
actions. For CRM and TCC, read synergy.

Difficulty in defining what the problem actually <u>was</u>
within the macrotask, featured positively within both
profile skills areas of PD and SA (PALS 1 & 2) in
macrotasks: X, BB, RT, and XTG (see over).
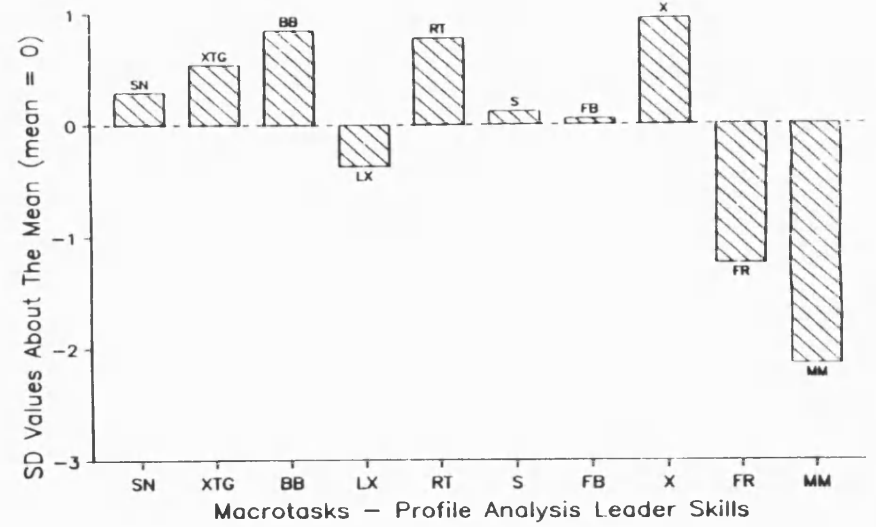
PALS 8: TEAM CONTROL & COORDINATION
(mean = 7.03, SD = 0.33)
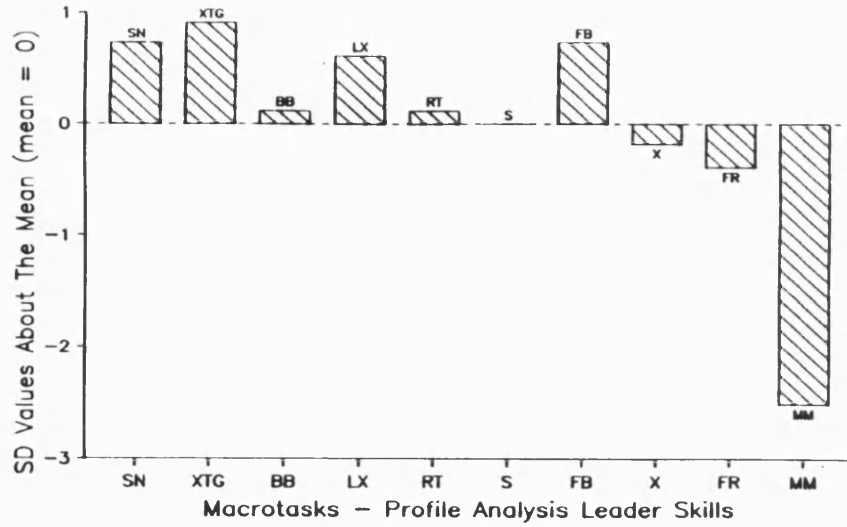
PALS 1: PROBLEM−DEFINITION
(mean = 6.18, SD = 0.41)

PALS 9: CRISIS RECOGNITION & MANAGEMENT
(mean = 6.43, SD = 0.5)
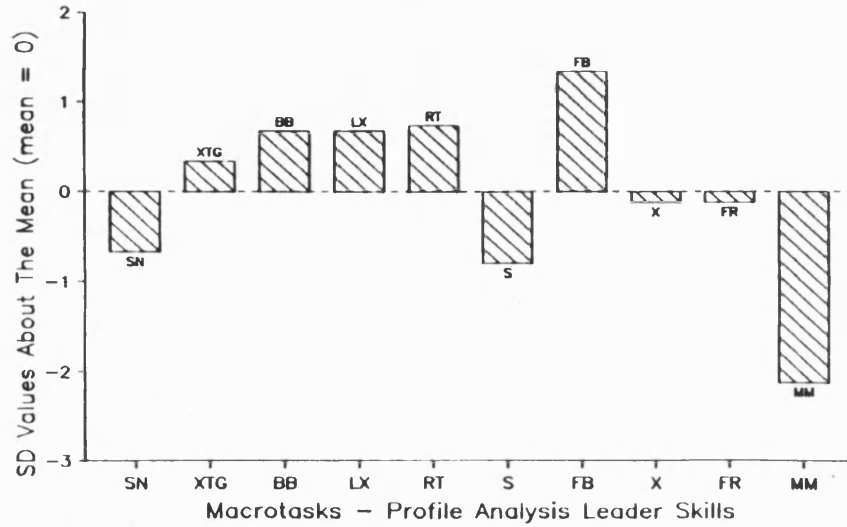
PALS 2: SITUATION−ANALYSIS
(mean = 6.12, SD = 0.48)
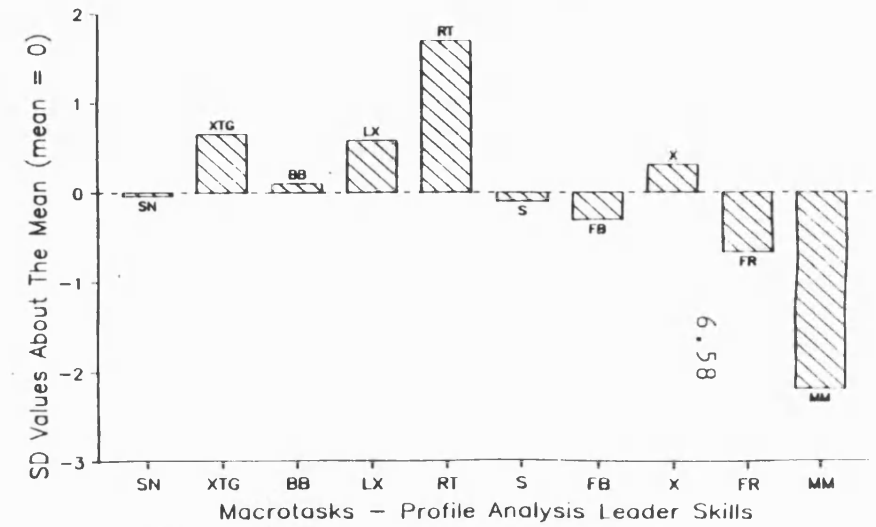
All these four macrotasks (X, BB, RT, XTG) required the
leader to listen very carefully and concentrate on
conscientiously developing his Factors shopping-list
within his AFCOP.

The profile skills of Self-Presentation (SP) and Task
Presentation (TP) linked consistently in macrotasks which
required strict rehearsals and confirmation via models,
for their success (SN, XTG, BB, FB, and X: PALS 6 & 7).

PALS 6: TASK—PRESENTING
(mean = 6.34, SD = 0.38)

Macrotasks — Profile Analysis Leader Skills
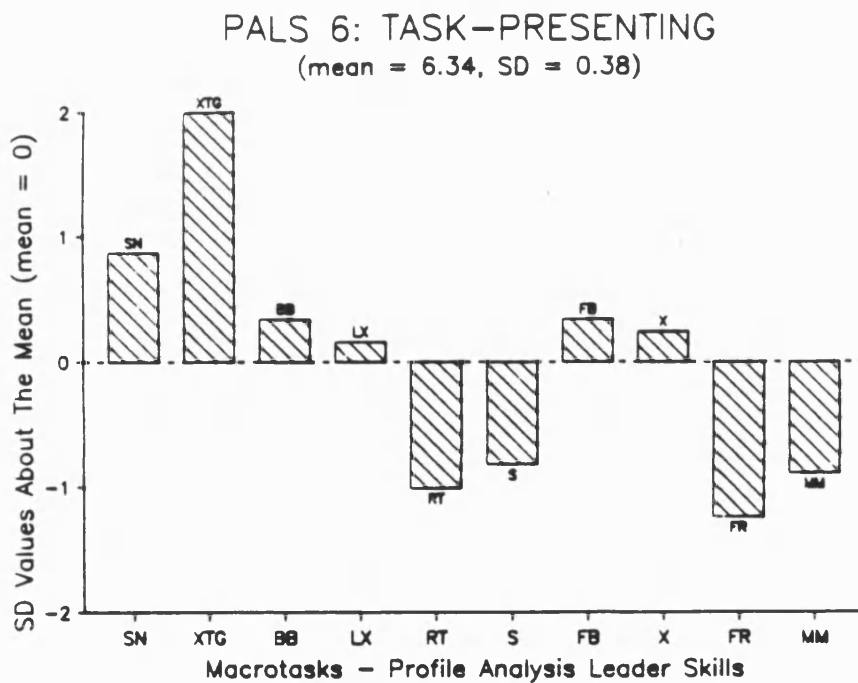
PALS 7: SELF-PRESENTATION
(mean = 6.11, SD = 0.41)

Macrotasks — Profile Analysis Leader Skills
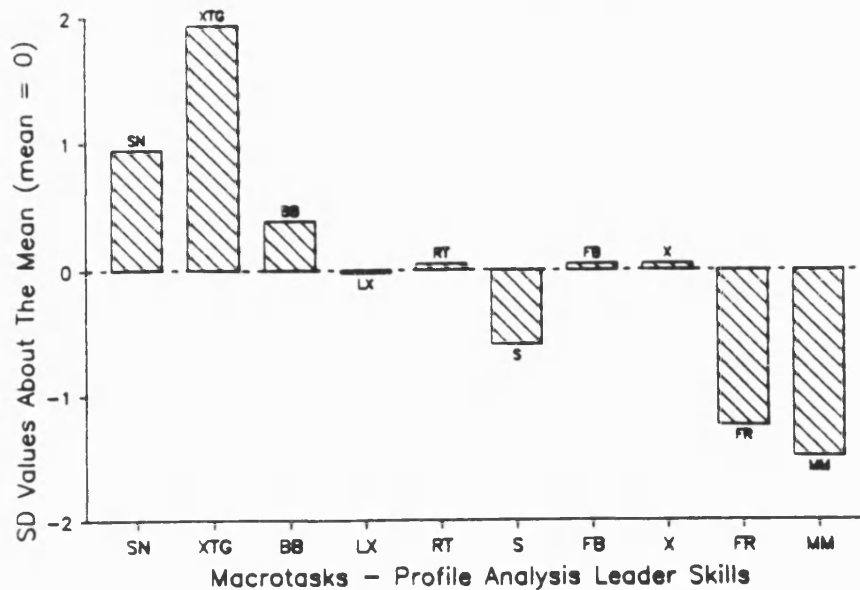
4   The consistently low scoring across the profile of the Mine Map and Ferry Raft macrotasks (Profiles 5 and 10, page 6.55, calls their usefulness into question.

The oral feedback on these macrotasks by the observers, suggested that in the case of the Mine Map macrotask there was a need for greater development, ideas discussed as a result of the profile included:

The 2 Weakest Macrotasks:

a. That the Mine Map macrotask, become two macrotasks, built around each other, the second task to be more dangerous.

b. The issue of a prescriptive list of the devices within the mined areas, and information upon their construction and operation should be included.

c. That another team should have to retrieve the devices from the mined area, using the information provided by the mapping team.

d. Following on (c), the retrieved devices should be themselves relocated along another track, to be mapped and relocated in turn.

These were all good ideas, however the safety aspects would mean constant supervision. The work itself would require a long training phase which would probably become seen as an end in itself, where our macrotasks at present only required 90 minutes to complete from the TP at the beginning to the feedback led by the observer at the end.

The Ferry Raft macrotask was heavily defended in the light of the profile on the basis that it served as a useful release from the depth of concentration within the other macrotasks.

5   The structural design similarities observed earlier between the Snatch, Flying Bomb, and Search macrotasks (see "Significant Factors Involved in Macrotask Design, page 6.46), were not consistently reflected within the Macrotask Profiles.   There was some consistency however between all three within the areas of: Problem-Defining (PD), Situation Analysis (SA), Task Framing (TF), and Team Control and Coordination (TCC), though not in scale. (see Macrotask Profiles 1, 6 & 7, page 6.62, overleaf.)

The deliberate "teaching" theme to the Flying Bomb macrotask was reflected in the concentration on the teaching and controlling profile skills: CRM, TCC, and TP.

Macrotask Profile 1: The Snatch (SN)
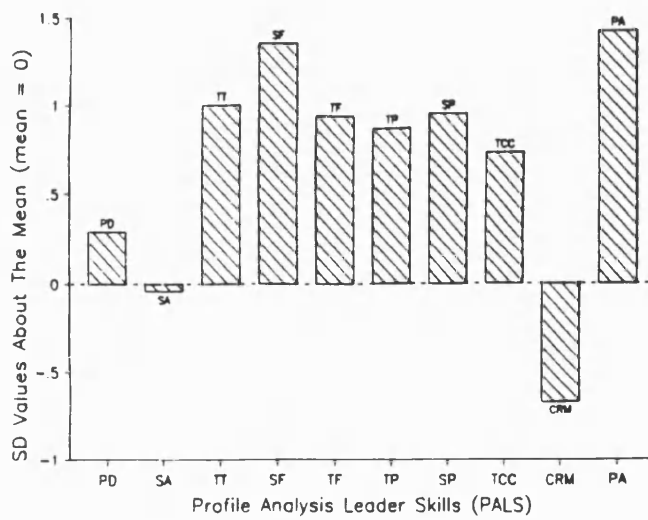
Macrotask Profile 6: The Search (S)
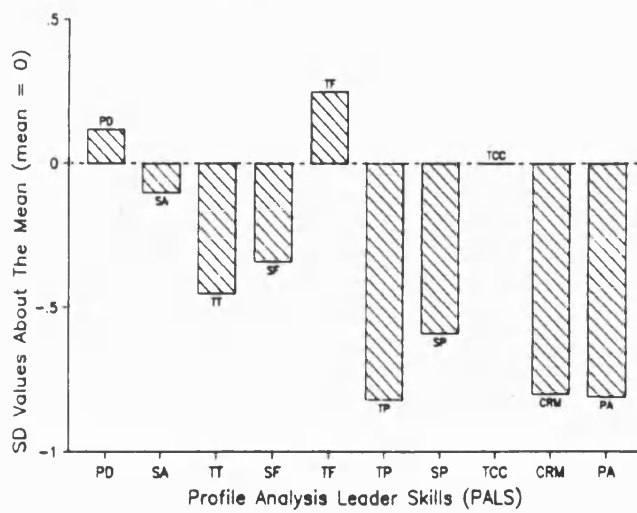
Macrotask Profile 7: Flying Bomb (FB)
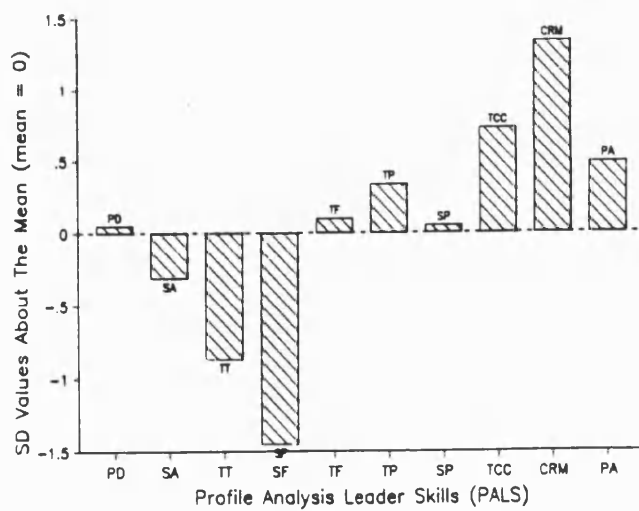
A high Tactical Thinking profile tended to mean that a lot
of work had to be done in order to correctly sequence the
action (PALS 3 Tactical Thinking, below: SN, XTG, BB, &
RT).

PALS 3: TACTICAL THINKING
(mean = 6.45, SD = 0.55)

Macrotasks — Profile Analysis Leader Skills
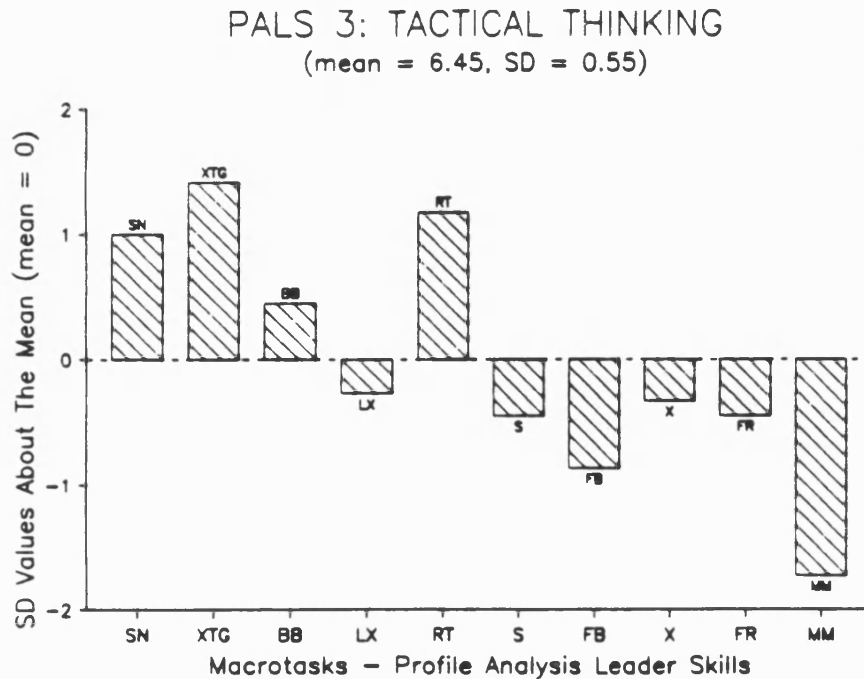
A low TT skills profile tended to be a product of a script
which was almost prescriptive, in being seen to contain a
structure which appeared to have its TT already,
implicitly prepackaged.

A high TT profile tended to link up with Solution-Framing
in continuing to offer more alternative Courses Open to
choose from.

A lack of ambiguity in recognising macrotask failure was
reflected in Performance Analysis (PA) scoring (PALS 10,
page 6.64), which related to the difficulties of
structuring the plan (Task-Framing: PALS 9, also page

6.64) due to the sheer weight of detailed information involved in the macrotask script, so that it worked, and could be explained.

PALS 10: PERFORMANCE ANALYSIS
(mean = 5.92, SD = 0.43)
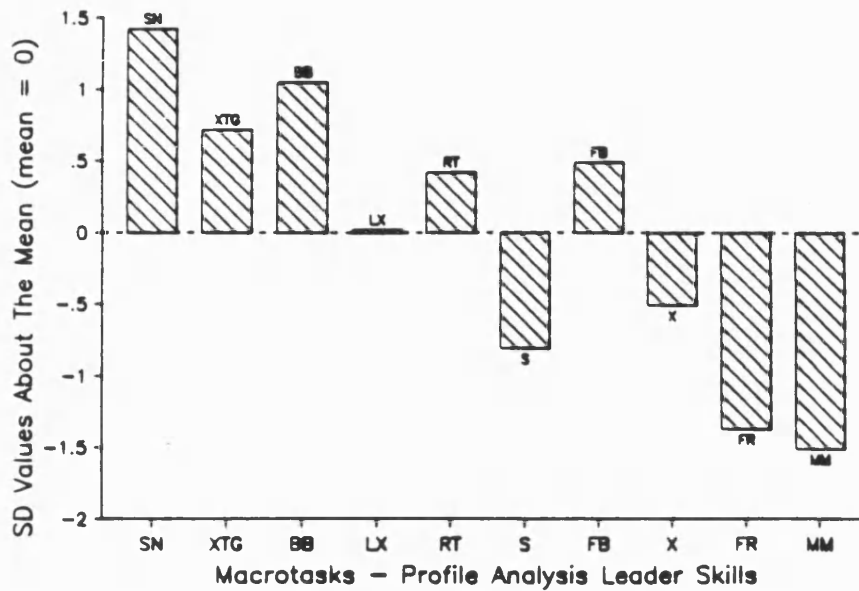
PALS 5: TASK FRAMING
(mean = 6.0, SD = 0.67)
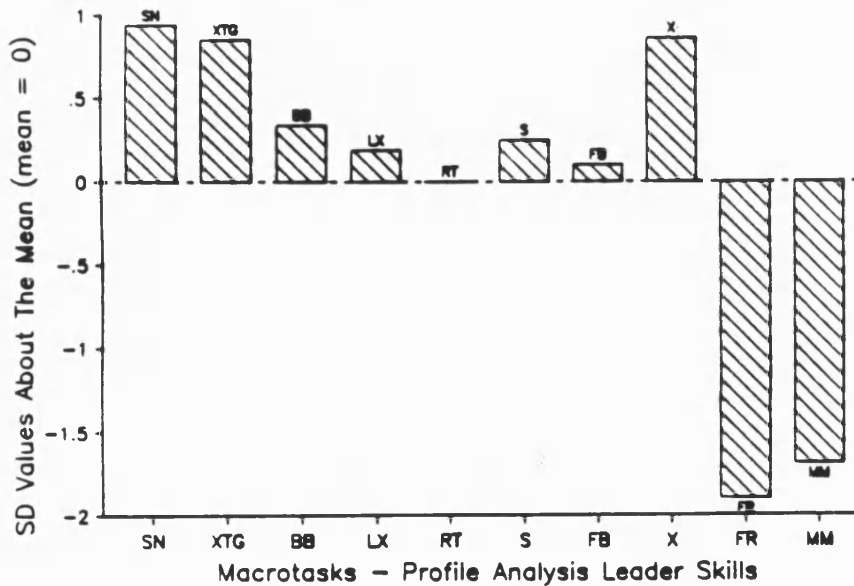
In terms of potential for Performance Analysis, and thus Task Framing, the following macrotasks had clear,

unambiguous criteria to define failure: The Snatch (SN)
macrotask - with a real, reacting person to contain and
control; Cross The Gap (XTG) - where seconds and safety
counted till the deadline; Bridge Blow (BB) - where the
three 100 second fuses were the real time-factor; Flying
Bomb (FB) - a noisy, premature bang followed a failure in
control and procedure, and Recovery Trawl (RT) where a
failure to consider the Tactical Thinking (TT), logistics
aspects led to impotence in two areas of the macrotask.

The only significant exception to the linking of PA
and TF is the Search macrotask, which although difficult
to explain with all its contingent detail, its script was
weighty but so structured that it usually ran like
clockwork.

Summary

The profiling tool was interesting in its making me think
more clearly about what the macrotasks did, how well they
did it, and how they worked.

As a tool, it did not affect the purpose of the macrotask
exercise in the Forest of Dean: which was, to exercise the
problem-handling processes taught within the microtask
phase and to develop, by its increase in scale, the
students' ability to lead the task action.

At the very least, a student on the macrotask exercise
would lead two macrotasks, systematically processing the
problems through to giving two task-presentations prior to

action, leading the task and then giving his feedback upon

his own and the team's performance; additionally, he would

have taken part in another eight macrotasks as a team-

member, listening to eight other task presentations and

contributing to feedback.

The key limitation of the macrotask profiling system

as a tool, lies in its being a lightly-disguised

macrotask-preference system. My initial reaction to some

aspects of the profiling, the generally low profile of X

(X-Task), FB (Flying Bomb), and S (Search), was to wonder

whether the high profile scores of other macrotasks wasn't

related to the perhaps (military) role-supportive aspects

of such high-scoring macrotasks. A closer look at the

profiles however, showed that I had been unjustifiably

cynical: macrotasks with high military relevance in their

scenarios were at the bottom as well as the top of the

profile.

In spite of suggesting preference, the profiles did

however establish two things: Firstly, that all the

macrotasks operate <u>all</u> the skills within the profile, so

we have an idea of the relative strength of the profile-

skill deployment necessary within different macrotasks

(with a low mean of 4.43 in Solution Framing on Mine Map,

and the highest mean of 7.73 in Team Control &

Coordination on Cross The Gap).

Secondly, the relationships between skills above the

artificial means in several areas was linked to the

macrotask design-criteria within the areas of planning,

communicating and controlling.

Finally, the skills criteria within the profile and the
six macrotask design factors (implicit product-
processing, team/task splitting, skill-teaching, process-
rehearsal-dependence, consequentiality, and crisis-
potential) link together to provide a useful tool for the
analysis and development of future microtasks and
macrotasks, designed for leaders and teams to operate and
practise systematic process skills.

I feel a lot closer now towards the development of a
technology of learning-problem design which can develop
useful learning-problems and not just serve to analyse
them.

It would be interesting to go a stage further, and develop
a linkage between macrotask profiling and individual
learning styles, fitting the student to the macrotask:
enabling the deliberate allocation of macrotasks which
would stretch students within areas in need of
development.

Chapter Seven: Going Public.

In July 1984, Philip Norman organised a reunion of the
participants of the 1984 Jackson INSET at Aldershot. A
pleasant evening was spent reviewing some of the video of
the INSET, and recreating the conspiratorial cameraderie
of the course. At this reunion, Keith Jackson kindly
introduced me to Dr. Eric Bates, who asked me to write an
article for a technical educational magazine called "View"
sponsored by the Department of Trade and Industry.

This was to be the beginning of my inadvertent career
as a management training consultant.

I had been planning to begin this research toward the end
of 1983. In reviewing the lessons I had learnt from both
INSETs in 1983 and 1984, I realised that these events had
allowed me to develop and test a lot of thinking which I
would not normally have articulated either on paper or in
conversation with colleagues. These INSETs had provided
large injections of experience and data, to review; which
under normal conditions would not have come my way.
Although, by the beginning of 1985 the TOGPSP microtask
skills teaching system looked like a viable package in its
own right, I was interested in meeting further new
audiences, generating new feedback and testing the system,
and its theoretical background with other professionals.
After all, the original microtasks and systematic
processes had never been intended as immutable, only to

stand up until someone thought of something better to teach the processes with.

It was in this spirit of inquiry that I wrote an article for "View", number 22 Winter 1984-5, (Annex G).

The View Article.

Within the article "There are Games and Games", I described the approach in terms of its games-medium, the purpose of the project, and the tools used to play the games.

I discussed the limitations of the conventional games approach in terms of its lack of transferrence into real life, and identified this area of transfer as one of the main concerns of TOGPSP.

The argument for a skills approach to learning as opposed to the acquisition of discrete chunks of knowledge was developed, arguing that the traditional system created few incentives, encouraged subsistence-learning and rarely transfered into how we live or organise our lives.

I listed the project's elements of

1   A structured teaching approach, allied to

2   The use of team dynamics as a vehicle to motivate students,

3   The disciplines of time and consistent skills feedback,

4   plus micro and macrotasks games,

- all working together to develop the systematic use of tools to problem-solve and task-present.

I warned readers of the predictable resistance of some
individuals to the conscious use of tools designed to
direct attention more accurately upon problems; as though
use of a systematic approach would make them vulnerable to
some dreadful insight into their own nature.

I used the skills metaphor of a key as a skills tool:

> "We can of course smash every locked door that we
> face - but a relatively universal key saves a lot of
> time and misdirected effort."

As a result of this article I began to receive a large
number of inquiries about the project. The volume of
demand assumed that I was officially-sponsored by some
major company or under the patronage of the Further
Education Unit, resourced with accommodation, secretarial
staff, training materials and with a team of trainers and
a programme of training events open to all. Clearly I had
stimulated or discovered a demand for quite specific
counselling within this problem area of curriculum design,
but my grand-sounding title of Task-Oriented Group,
Problem-Solving Project, did not reflect the reality of an
individual without access to either financial or political
patronage. I had hit a vulnerable nerve amongst some
teachers who were conscious of the difficulty of
developing initiating skills and behaviours among their
pupils.

The question was, what was I going to do now?

The First Step.

One of my earliest, and geographically closest,

correspondents was Robert Looney (RL), a BTEC HNC Course

Director at Swindon College.

RL ran courses which involved students working together in

groups on business problems such as case studies (Easton,

1982). RL had begun to be affected by students'

disenchantment with the approach: that at the end,

students were often no nearer understanding what the cases

were about than at the beginning, left to sink or swim

most students learnt or developed some of the necessary

skills, but did so with a disproportionate amount of

energy in terms of the generalisable skill produced, and

some students learnt no skills at all.

As Easton puts it:

> "the gap between conventional and simulation learning
>
> is too great. Conventional learning methods require
>
> students to accept and learn the concepts, principles
>
> and techniques that the teacher thinks will be
>
> useful. Simulation learning methods ask students to
>
> invent their own concepts, principles and
>
> techniques."

In other words, the misuse of the "experiential" approach

as neutral and non-directive, served largely to confirm

students in a dependency relationship with the purveyors

of the educational process.

RL's main interest was in developing a set of transferable

problem-solving skills, with a subsidiary interest in

students experiencing different learning situations,
developing social and group skills as well as initiative,
self-confidence, and leadership skills.

I was keen to experiment with a group of civilian
students, and RL suggested that I ran a weekend for his
part-time, day-release, sponsored BTEC students on the
weekend of 26-28th April 1985. I was doubtful about the
practicality of the idea of running a weekend combining
both micro and macro phases, but RL seemed to believe that
his mature students would be able to deal with the
learning and the pressure - his mature students, having
made a conscious decision to attend the College, often
with few concessions from their employers, and with some
firm ideas for using their qualifications to improve their
lives and employment. I gathered, by implication, that
this was not the mainstream experience in terms of the
majority of full-time students on business courses at the
college.

My assistant, Sergeant Philip Stonier (PS), was interested
in helping me with this experiment, and so it became
possible to plan a weekend of approximately 48 hours for
thirteen students, with an accent upon the macro aspects
after a cram course of only 5 microtasks: Candles,
Jigsaws, Cones, Buildex and Cobex, plus associated PS and
TP processes. As you can imagine, the logistics of this
exercise were considerable, but the learning prize looked

worthwhile.

The accelerated microtask phase was utterly exhausting. The pressure of motivating the students and maintaining the pace, in order to prepare the students for two useful half-days of macrotasks meant being quite merciless and inflexible about the fixed timings of microtasks. As it was, the first evening session on Friday saw us working from 8pm till 1am on Saturday morning. Fortunately, the enthusiasm of the students carried me along. The next micro phase began on Saturday at 9am and went on until 1130am. The majority of students then had less than an hour to use their acquired skills to process a macrotask problem in order to arrive at a satisfactory task-presenting script for the first afternoon macrotask exercise session.

We had two teams of students (6 & 7), accompanied by Robert Looney and another lecturer from Swindon College, Peter Cullen. Together, all four of us took the students to the macrotask areas on both days and briefed them from the macrotask scripts. (Philip Stonier having extracted RL and PC on the Saturday and Sunday mornings, and walked them round the macrotasks, explaining the design and also using them to set up the macrotask locations in the forest.)

With such large teams in the macrotask phases, we had Philip Stonier and myself as guides and time-keepers, RL and PC as uninvolved observers; I decided to ensure the rotation of students within the teams to act as debriefers

managing the feedback after the task, as per the feedback proforma issued at the beginning of the course.

The feedback after the course involved a simple questionnaire completed during one of the following sessions at Swindon College accompanied by two reports from RL and PC.

The student feedback was interesting. The main experience of the weekend had been that key word: "teamwork" - the discovery of what it was to work in a team with a clear goal, and how the team had worked for and against the leader. The most significant learning had been in terms of the need to study the problem in depth, as taught. Under pressure, there had been some tendency to revert to dependency behaviour and to skim the factors in the situation in order to develop and justify an idea which was _already_ on the horizon.

When asked about the presence of system to solve problems and present tasks within their existing business environment, no-one claimed to have met the use of system to solve problems in such "a logical, concise manner."

All students affirmed the general applicability of such problem-solving skills. The only criticism was the lack of time in which to deal with the macrotasks before the exercise started, and the amount of rapid movement cross-country in order achieve the tasks within the timetable, so that everyone could lead.

Philip Stonier and I both found it difficult to encourage
students to debrief teams and leaders impartially. The
preciousness of the teamwork experience, and the lack of
macrotask preparation time, made everyone feel vulnerable.
However, as the exercise progressed, the debriefing
improved. This was partially due, it turned out, to their
inexperience of addressing the group, or of talking to a
captive audience of peers. The students all admitted to
nervousness, but now felt more confident in dealing with
any future eventuality; being, they felt, the better armed
to deal with it.

From initially looking at the role of leader or manager as
something that you either had an innate ability to
exercise, or that you "grew into", there was now a
consistent appreciation of the basic hard work necessary
to prepare for action of any kind, especially involving a
team.

An interesting point for me on this weekend was the
presence of the female students, for all of whom this
weekend was a significant challenge. Putting all
preconceptions aside, I did notice that under pressure,
the girls slowed down, and dealt with the phasing more
consistently, and used the rehearsals more effectively to
confirm the team's and their own understanding of what was
supposed to happen and when.

Most of the students expressed the wish to do the weekend
again!

Their instructors' feedback was more useful, since they had the opportunity to step back and observe whilst the action was going on. RL admitted that the college needed to prepare more thoroughly for such a weekend. I had been correct in my assessment of the optimism in expecting the students to derive the correct emphasis upon process if rushed into macrotasks with too little process-training and too little time to prepare their plans, task-present and debrief. As well as a need for more preparation, RL saw a need for a follow-up by the college, in say, its deliberate use of the processes from then on in the students' project work.

Apart from the acquisition of enabling focussing skills such as AFCOP, and within it the use of modelling, the deliberate generation of alternatives, and the use of structure to present a plan, RL felt that a significant part of the weekend had been the experience itself.

RL felt that the training had been a major opportunity to team-build, to

1   Feel successful.

2   To go into new situations, risk-taking but still armed with process-skills to exploit the experience positively.

3   To lead, with the prospect of making unambiguous mistakes which could still be corrected, and success achieved.

Peter Cullen also reported on what he saw as the main

aspects of the weekend, which he saw as follows: general impressions, the environment, the microtasks and macrotasks and a consideration of future possibilities.

Peter was impressed with the teaching method and the "fun" atmosphere, Peter did complain at not having had the opportunity to do the course himself! Peter felt that it would have been interesting to develop the team - maintenance aspects into construction of overnight shelters.

Peter felt that the microtask training deserved more respect in terms of time. The obvious rush had been useful in developing a task-attitude among the students, but more time spent at this fundamental stage would have benefits of definition within the students' minds in the future. All the microtasks exercised the processes well, Peter identified the "Buildex" microtask as particularly effective in developing the communication skills aspects, through the need to take the workers' perpective into account.

Peter was extremely positive about the macrotask design, the challenges offered through the scenarios were, he felt quantifiable through the disciplined, systematic use of process. Peter also made some useful comments upon individual macrotasks, impressed by the deliberateness of the macrotask design's linkage precluding the officer "selection" aspects built in to the outdoor management training regimes he had himself experienced. Like me, Peter was disappointed by the students'

difficulties in assessing and leading the feedback after a
task. Similarly, he found that the military language
within the scenarios led initially to confusion as to
which kind of "game" we were in fact playing. One
individual had assumed a stylised military persona which
led to his conspicuous failure in both macrotasks on both
days within a team where both girls proved themselves
proficient in abandoning their college role of passivity
and of operating the Systematic Problem-Solving and Task-
Presenting (SPS/STP), and feedback skills. Clearly it was
in my interest to prevent this immature type of style-
confusion in a designed task environment, where skills
were specifically required.

Finally, Peter found the group development via teamwork,
task delegation, and systematic use of process a welcome
means of realising skills-learning which he felt could not
be learnt within a conventional learning environment at
College.

The TOGPSP Seminar: University of Bath, 15th June 1985.
I managed to gather seven individuals at Bath for a
seminar on the project. This date offered the greatest
concentration of individuals at a time when I was
available. At this seminar, I made a basic mistake: I
believed that since all the students were professionals in
education, I should explain my motivations plus the
theoretical aspects underpinning the developments, and

<u>then</u> carry out a whirlwind tour of the microtask system

with some references to the macrotasks at the end.

In the post-seminar feedback, I learnt that most of it had

gone over their heads, and that, like most students, they

were happiest working and not filing concepts and

theories. A useful lesson. Overall, we only had about

four working hours.

The thematic introduction began rhetorically with part of

Wilde's (1895) speech by Lady Bracknell:

> "Ignorance is like a delicate exotic fruit; touch it
>
> and the bloom is gone. The whole theory of modern
>
> education is radically unsound. Fortunately, in
>
> England at any rate, education produces no effect
>
> whatsoever."

I continued with the broad and by no means original idea

that by learning to solve problems, we learn how to learn.

I illustrated, through Bruner, Holt and Musgrove et al,

the obstacles to this learning to learn, and used Bales'

example of individual tendencies within problem-solving

activity to be characteristic, to be an analogue of

personality.

Next, I presented the working TOGPSP model:

1   Working, communicating, and learning in teams.

2   Systematic PS and TP (plus the 1983 micro/macro

      system.)

3   Physical modelling of problems.

4   Open agenda.

5   Feedback on consistent shared criteria.

In the afternoon session, I tried to describe the majority of microtasks, detailing the processes and actually getting the students to work at operating the system on a few microtasks.

The afternoon session demonstrated the difficulty of one individual in overcoming their tendency to apply their own characteristic approach at all times, and to see the use of other approaches as potentially undermining their own values.

A Triad discussing Factors in the Water Transfer Problem.

PM (Petra Majors): This isn't testing problem-solving, this is testing leadership standards.. and it's more or less saying that the other styles of leadership, say consultative.. are not good.."

RL (Robert Looney): "How do you work that out?"

PM: "It seems to.."

JM (Jerry Mahoney): "So you're saying leadership isn't method, how can you say that?"

PM: "He hasn't told us what the method is, and why PS is important...where are all these skills he talked about?"

RL: "The skill at the moment is learning the particular routine.. "

PM: "He's saying that there's no other way of solving problems, no other routine, or way of doing it, it's unreasonable, it's unlikely."

RL:　"You've got to have a structure for handling it.."

PM:　"Yes, but I think that the structure (here) is

　　　unnecessary and too complex.. I can't understand the

　　　point of it, it's irrelevant.."

RL:　"What's worrying me is that you're saying that

　　　there's no method, of dealing with problems."

PM:　"He hasn't told us what the method is, and why

　　　problem-solving is important.　I can't understand

　　　all this mollycoddling development... "

I subsequently discovered that PM had read the Guardian

article (1984) about the Jackson/TOGPSP INSET and had been

incensed by Susan Thomas's saying that while

　　　"democratic, open management is the most successful

　　　as a general rule.. in a time of crisis, a single

　　　authoritarian leader is best."

At no time on that course, or subsequently had I ever said

that this was the basis for the development of TOGPSP.

Unfortunately, PM demonstrated the tendency of initial

information to shape the processing of all subsequent

information, and her resistance to what was seen as the

apparent inhumanity of the deliberate use of particular PS

structures was thus raised within her own mind to the

emotive level of a symbolic rebellion against

authoritarianism (Orwell's Winston resisting Big

Brother: 1984 ; 1949).

Seminar Group Working Through The Water-Transfer Problem.

JM: "If we didn't know syphoning, we'd only have three methods."

RL: "How could we get a fifth?"

JM: "How could we go about it with this method?"

PM: "And what about a way of assessing which is the best?"

VN: "We don't try to give criteria of success which are exact on this, all we want to happen is that they physically manipulate the equipment, then physically structure the problem like this (indicates AFCOP on blackboard), we ask for four (Courses Open), but we want at least two."

JM: "I understand this Victor, but for me, the acid test is to do it."

VN "Normally we would physically do the task.. but you're right in terms of brainstorming, it would be interesting to create that kind of pressure through the fifth one, but.. if they come up with two ways of doing it, then I'm happy because I just want them to use the model. At first - this is the big problem, you need to give them positive reinforcement right at the beginning, in other words, all ideas are acceptable if they will function."

PM: "But are people learning anything apart from how to use your system?"

VN: "They are probably not learning anything other than

how to use a system."

RL: (to PM) "That's the structure, you use it."

VN: "That's the point, we're not teaching them to syphon

water, our objective is to exercise the model

(indicates blackboard), that's all."

PM: "But don't you have to convince the student that the

model is working?"

VN: "That's not the problem, because they just go on,

problem after problem, as in fact we will today,

they'll learn, as the model becomes more complex, the

problems become more complex and the dynamic will be

established for progress..."

Mike Hobbs, a Primary School headmaster asked me an

interesting question about skills-teaching: "Was it

possible to identify a particular problem-solving skill,

and then produce a series of tasks which would articulate

and exercise just that skill?" This took me back to the

Burnham Beeches INSET. In answering this fundamental

question, I used golf as a metaphorical illustration of

skills-learning: in a golf-swing, you couldn't usefully

break the swing down into little component parts, and then

practise them individually, you'd have to practise the

whole swing with an accent upon developing a particular

area. I think that that is true of PS and TP.

As a result of the seminar, I determined that in future I

would not develop the intellectual background, unless I

was specifically asked to do so. From that seminar

onwards, I have always suggested that interested researchers come to an event and observe, since it is easier to deal with intelligent questions coming from a background of participant observation. The main point was that I forgot that the medium is the message. I allowed my medium to become contaminated with too many options and too much detail that was supportive, but not really instrumental. How many times had I taught others to "Keep it simple" and yet allowed the medium, and the message to become too complex?

I subsequently ran two events for Petra Majors in the forest of Dean. A consistent source of initial distraction during these events was PM's attitude during the first vulnerable hours of microtask session. This "attitude" took the form of pedantically asking me to clarify and restate points as they were made. This patronising attitude so annoyed the mature students that the cry came up from the floor at the third request for clarification: "Well you may need to have it clarified, but we're not that slow!" This stopped Petra's interruptions but developed into defensive body-language postures and studied attitudes of disinterest. PM refused to join in with her students, disappearing until the evening was celebrated in the local pub, abandoning her administrative role. It was quite clear that PM was alienated by the consistent, modular approach that was developed, it was as though emotionally she had to say to herself: "well, the students may need all this,

but I don't." In transactional analysis terms, the appearance of PM's "child" kept pushing me out of my adult, and into being "parent" to her "child". When I asked PM why she felt this way, she continued her seminar line of needless complexity. I had to make the point that whilst it may have appeared complex to her, it seemed to me that her field of problem-solving must have been far less rigorous and more restricted than the business of organising teams of individuals, where you have to be far more articulate and specific in the instructions you design and issue to achieve results. The social dynamic of teams requires precision and organisation, and it can only be a kind of arrogance or inexperience which says that modelling, structured approach, step-by-step care was unnecessary.

On the other hand, this conflict may have been purely a clash of personalities to which I was an equal party. Perhaps I was co-opted to be a tame authority figure which she felt, as my employer, she could safely take on and defeat, symbolically resolving some previous crisis. Unfortunately the weekend developed all the conspiratorial aspects of a children's party with a prima donna, spoilt child present. In spite of, or perhaps because of all this, both weekends were very intense and enjoyable.

These two events followed the format of the initial event run for Swindon College: however, I reduced the macrotasks

to one day, and spent more time upon the microtask stage. The subsequent workshops run for the School of Management (University of Bath) and the Wiltshire Area Management Centre in 1986, followed this amended pattern of a 15 hour microtask session (Friday 2000-2300hrs, Saturday 0800-2000 hrs) followed by a day's macrotasks, all briefed on the task area, and with students experiencing both the roles of leader and of observer, assessing performance and managing feedback after the macrotask.

The School of Management workshop was interesting in that for the first time I was dealing with students whose attitude to the microtask session was one of processing it, then consciously placing it within a business/academic hierarchy of knowledge (which clearly was determined by their role as undergraduates within this university environment).

It was only when we got out to the macrotask environment that the penny dropped, and the realisation that the learning had to be consciously extracted from the hierarchy, dusted, and then exercised.

Clearly, they found what I had found: that it is one thing to know a theory, and quite another to be able to use it. Ironically, several students said that the macrotask day was the best day they had had at the University over the last two years! This experience confirmed my feelings about the importance of changing environments when introducing new ideas, and more important, new learning

attitudes to students. The initial microtask phase had

been carried out at the University.

Although the residential sessions usually ended with

applause, this was the first time that all the students

had insisted on shaking my hand after an event!

The Microtask Development, 1986.

I was contacted by Jerry Mahoney in January 1986 and

offered the opportunity to slot into their NEBSS and B/TEC

residential programme for a day session. Unfortunately

they were restricted in the number of hours of employment

they could offer an outside lecturer. Jerry had to

justify bringing in an outside lecturer for residential

weekends of training which had traditionally been in-

house. Similarly, he had to deal with critical colleagues

who refused to accept that anyone could have skills or

techniques outside the organisation which they did not

themselves possess. I worked for Jerry's Business Studies

Department on these residential courses, doing five day-

sessions within the last eighteen months which were purely

microtask-based.

This concentration upon the microtask phase had the

benefit of tightening this aspect up, allowing me to

experiment and look more deeply into the approach.

I was struck by the evident motivation of the audiences on

these residential weekend sessions. They were usually on

day-release, often within an overt promotion system and

looking for pointers to make themselves more visible

within their organisations. These students often worked
as part of a team within a business hierarchy, and
suspected that the team could be better handled. Some
students were in the position of paying their own fees,
out of low wages in order as they put it, "to get ahead".
All these often mature students looked upon their courses
with a certain amount of cynicism, but clearly wanted to
use the learning acquired and not just add it to an
aggregate hierarchy of abstract knowledge.

With such an exciting audience, it was possible to have
greater confidence in the culture-carrying capacity of
the structured microtasks. I learnt gradually to relax,
smile a bit more, and to develop the latent communication
skills aspects within the feedback sessions. The most
significant change came in teaching method. I confirmed
that the first 30 minutes of the session were the most
vulnerable in the student's acquisition of system, and it
was during this initial period that the greatest effort
had to be made by the instructor to overcome the
functional fixedness tendencies which were often supported
by previous experiences of brainstorming sessions, in some
cases, "previous" meant the day before! The instructor
had to speak to each student and confirm that the system
was being exercised correctly.
The three initial learning objectives were illustrated
almost conversationally, (like de Bono) using blank as
opposed to prepared vufoils. Blank vufoils thus gave the

students the impression that _they_ were determining the
direction and pace of the learning as it developed,
disguising the well-developed structures within the
microtask design.

Similarly, it was possible to develop the Lessons Learnt
sessions after each microtask to do two things:

Firstly, to draw from the list of points made by the
appointed delegate, the _next_ learning objective (see
Annex H), and secondly, to build up confidence in
delegates' ability to face a large group and to
communicate material which they had themselves summarised
by listening and leading their triads to give useful
feedback. The use of simple euphoric techniques such as
my leading the applause and openly congratulating
delegates upon their summary, and naming individuals as
the source of ideas, seemed initially rather too overtly
manipulative to be successful; however, I was proved
wrong, and it became a useful device.

Another development was the delegates' use of vufoils to
describe and defend their Plan-Grids. Once this was
established as normal practice within sessions, it became
possible to delegate the responsibility for managing the
feedback session to a triad, whilst I just observed and
chose the appropriate moment to introduce the next
problem.

After the overt introduction, the only other microtask-
derived pieces of process were the Tactical Thinking (TT)

concept and the Plan-Grid (PG). To some extent it was possible to develop the TT/PG idea from the Jigsaw Sprint microtask, and so I would allow the problem to get to the end of the AFCOP stage, before asking the rhetorical question of "Wouldn't it be nice to have a simple method of graphically displaying our plan?"

Another product of this period was the development of the AFCOP, and TT/PG formats. This was due to my consciousness of the difficulty and importance of guiding the students into using process without getting trapped into, and inadvertently confirming, functional fixedness routines.

The event that led to this development was when I was faced by a day-long session with a group of 51 students. In such a situation, I couldn't guide everyone nor be as responsive to individuals as I would have liked to have been, so I took a 20-minute break, designed both formats and reproduced the initial designs on a photoprinter, then issued them. As I said in Chapter four, the natural tendency is to raid the repertoire for alternatives. In fact, the first tendency is

     1.   Aim -> Plan.

The second (developed creativity) tendency among students who had just undergone some group brainstorming techniques the day before, was

     2.   Aim -> Courses Open.

The AFCOP format (with some guidance, and supervision

during that vulnerable first 30 minutes of the session)

meant that the first steps were correct, and helped to

confirm the importance of seeing the problem as it <u>was</u>,

and not as something that we <u>wanted</u> it to be:

3.   Aim -> **Factors** -> Courses Open -> Plan.

The need to be able to refer to this delaying process, in

other words: systematically structuring the problem in a

Factors shopping-list, so that you were really sure about

the extent of the problem, and had categorized the

relationships between the Factors; led to me introduce the

term "suspended judgement" (Gordon, 1961; Adams, 1974).

In its original use, it refers to the generation of

ideas through not rejecting or judging <u>any</u> idea that

flashes through the consciousness, I deliberately extended

its use to this, the most important of stages in the AFCOP

process, the creation of an exhaustive, structured,

Factors shopping-list.

Once the formats were established as process-models, a new

idea became evident within the last two microtasks, the

idea of developing a PG backwards, in other words of

building the blocks-structure in microtask 8, first; then

phase-by-phase returning the blocks to the bag under the

table.   This meant that it became possible to attack a

problem from both ends, at once:

S(T) -> (Phase T-1) -> ? <- (Phase 0+1) <- S(0).

Where

S(T) = Situation where aim is achieved, task completed.

S(O) = Situation at the beginning of the task.

Phases: T-1 = penultimate phase; O+1 = first phase.

This is perhaps a form of "direction" which can usefully be generated by the problem-solver - the key to both the Jigsaw-Sprint and the Buildex microtasks lay in pre-structuring or "treating" the elements of the problem, so that valuable time and attention could be reduced during the action phase.

By changing perspective, through considering the task process in reverse, new relationships between existing factors could be developed: natural "units" of task-items were suddenly perceived which could be pre-sequenced into units <u>before</u> the action, so as to effectively accelerate the building processes.

Let's look at the example of A's task within the Buildex microtask: to construct a vertical tower, twelve units high, within fifteen seconds, with the bag of blocks on the floor at the start and both workers blindfolded and silent during the action.

Conscious use of the "reversal" direction technique temporarily transformed the problem into: the return of the twelve blocks in the tower, to the bag on the floor, within fifteen seconds. Faced with this perspective-shift, the problem-solver invariably connected the twelve blocks with the four hands of his two silent, blindfolded

workers: dividing the twelve blocks by the four hands
would produce four "handy" sub-tower units of three
blocks.

The technique established, the task could be done
"forwards" by beginning the task with the workers' putting
three blocks into each hand, then inserting both pairs of
hands into the bag. The next step was to withdraw both
pairs of hands, and by placing the four fists on top of
each other, the tower was built.

The Feedback From Microtask Residential Sessions.

I was particularly interested in the students'
perspectives upon the sessions.

I knew that too structured a questionnaire would probably
direct the students into giving me what they thought I
wanted, and reduce the advantages of a naive reaction. I
deliberately delayed the issue and completion of the
questionnaire for three months.

As an instructor and researcher, I was particularly
interested in the students' assessments of what had
actually been learnt. There were 54 responses within this
area.

The main learning point covered the area of the use of PS
structures to suspend judgement, generate alternatives,
overcome fear and panic in a problem situation (29/54).

The second important area of learning was that via
teamwork produced through a structured approach, the
importance of listening, trust, and patience had been

underlined (25/54).

I was interested in the students' feelings of satisfaction with the sessions. 19 responses out of a total of 23 pronounced themselves as very satisfied, though for different reasons: 10 felt that they had developed increased personal confidence and capacity to deal with personal problems and with their job, and 9 felt that they had learnt something new about themselves in terms of their potential to lead and work within a team.

The relevance of the learning was an important topic. Interestingly, the students split the subject of relevance into three categories within 29 responses:

1   Mostly of personal relevance, at the moment (6).

2   Relevant within work role (12).

3   Relevance in both personal and work role (10).

Within category 1, students felt that their position as "indians" within the hierarchy precluded the taking of initiatives or analysis of problems.

In category 2, the experienced teamwork dimension had led to reduced personal stress for students who as managers of small departments had used the tools of analysis: in other words, PS structures based upon listening and relating to subordinates (in order to build up a factors' shopping-list of the situation).

The session's deliberate use of pressure to develop systematic process had helped at least 10 respondents to overcome the often understated problem of fear and panic when new situations appeared or old ones changed.

Seven individuals had already managed to use the learning to deal with real situations.

Two had used the system for dealing with personal problems like buying a house, another commenting interestingly that at work it was difficult to deal with problems which although evident, did not _belong_ to them. This did not prevent the latter from changing her relationship with her new staff to one of friendship and respect.

Three individuals found that their method of communicating a task in detail had changed, instead of giving subordinates lengthy, involved instructions, they would plan a sequence, demonstrate what it was they wanted to happen, listening, confirming and speaking with greater precision.

Two individuals had used the systems to deal with major problems: One involved the analysis and redesign of the firm's system of ordering goods and invoicing, and the other individual had modified his autocratic approach toward his staff, through listening and communicating before planning changes.

I was interested in the structure and usefulness of the sessions. Out of 21 responses, 6 wanted more time to appreciate and confirm the learning, suggesting at least two days, whilst 14 believed that the structured pressure stretched them sufficiently.

The usefulness of the AFCOP and TT/PG formats was

confirmed by all 19 responses, 13 specifically referring to their usefulness in laying out the problem, allowing the problem to be identified and simplified through use of systematic processes.

In terms of identifying which problem taught the most or summed up the accumulated learning, the Buildex wooden blocks microtask proved the most all-round problem with 16 references out of a total of 24. The difficulty of dealing with the task's initial, superficial impossibility and the need to see the building operation from the workers' perspective, and accordingly to issue a precise, sequenced pattern of instructions, made it memorable. The Jigsaw microtask came a poor second with 3 references to its signal demonstration of a pandora's box of alternatives emerging once the problem-solver slowed down and applied suspended judgement to actually see the problem in all its potential factors.

Finally, all 20 respondents on the topic of characterising the development of the triads agreed upon the utility of the team-building approach under pressure to develop the systematic approach, and to accelerate the learning process.

Summary:

The most interesting learning point for me was that the
relative success of the civilian microtask phase was
largely a product of interaction between several factors:

1   The TOGPSP microtask system's flexibility and design.

2   My receptivity to student feedback - particularly the
     two skills of communication: listening and speaking
     with conscious precision; and willingness to act upon
     it.

3   The audiences' removal from their normal learning and
     working environment to a special location; a removal
     accompanied by overtones of design and purposiveness,
     implying that only under these special conditions can
     this "special" learning be carried out. This removal
     serves to clearly exploit the "rite of passage" and
     temporary "total institution", overtones to enhance
     the learning, enabling the unselfconscious
     development of a task-handling language; and through
     intense teamwork, defeat the tendency to see the
     learning as yet another form of abstract art, a
     "finite province of meaning" from which consciousness
     always returns as from an excursion." (Berger and
     Luckmann,1978)

4   Most importantly, this audience's actual existing
     experience of relatively impoverished teamwork as
     workers and management in real situations. This
     experience meant they could often locate the new
     skills within an existing or potential working

context, and use them.

Perhaps the most exciting aspect of the feedback was the awareness of growth away from dependence, specifically away from a fear of change, through to a consciousness of the capacity to manage a situation through use of process skills.

The move into the civilian arena accelerated development of the Tactical Thinking concept, the SPS formats, the recognition of the need to develop ruthlessness in defining cut-offs in terms of investment within a plan; made tangible the real obstacle of functional fixedness and led to the expansion of suspended judgement into the area of accounting for the factors within a problem.

Ironically, slowing down at the beginning of the problem meant a significant reduction in PS time.

Ultimately, it taught me to make the implicit more explicit.

Finally, I realised that the key topics were action, ownership, results and language. In an informal feedback session six months later, two groups.confirmed their initial impression of the apparent impossibility of all the problems from the Jigsaw sprint ultimatum onwards, until resolved by the use of the given process-tools. Once they began to apply those tools they found that they could operate at what seemed to them to be at almost an inhuman level of speed and precision without the usual anxieties.

So action - you need to demonstrate and confirm
theory through action.

Ownership and results - PS is an odd kind of field and
unless individuals have a sense of ownership of the
processes and of the performances that they design to
solve the problem, without that sense of ownership, the
processes remain artificial. The learning process needs
to involve an unambiguous and almost symbolic group
identification with the results of the process.

Unless the standards of performance are stated at the
beginning of the PS session, and pitched very high - the
need for the process skills will not be evident.

Surrounding all four points so far listed, the application
of PS language as a task-handling culture-carrier: turning
it from another abstract chunk of knowledge to be added to
an existing hierarchy of knowledge, into an everyday
reality. - Which is why TP and feedback sessions are an
integral part of PS, PS language has to be articulated and
integrated as a corollary to the consistent use of
structures to analyse and present information; perhaps
even more important, this PS language needed to be
articulated to acclimatize students to the possibility of
assuming new social roles, to reducing passivity and
becoming actors within the working environment, not just a
passive audience. Perhaps Whorf (1956) is correct, and
language does do more than act as a passive "interpreter"
or "translator" of mental life, actually determining how

we think about and see the world.

The resonance of language as a context-carrier meant accordingly that I had to modify the original "military" language of the TP formats and their macrotask scenarios.

The story McLuhan (1964) quotes of the American Prisoner of War held by the North Koreans is relevant within this context; when given books in the Russian language to read, he found

> "I had to stop reading those books, to stop practising Russian because with the study of language the absurd and constant assertion began to leave its mark, began to find an echo, and I felt my thinking processes getting tangled, my critical faculties getting blunted.. "

I relearnt that the medium was the message, that the teaching method for a task handling-culture needs a language and an environment to reflect that message or be defeated by its own contradictions or limitations.

The microtask phase had started out purely as an auxiliary to the macrotask phase. With an audience that could locate its processes within their own existing working context, the microtask sessions for Harrods and Kodak established it in its own right.

Chapter Eight: A Review of Issues within Task-Oriented Group, Problem-Solving.

It is interesting to consider the circumstances which surround the idea of formalised training in problem-solving (PS). Logically, it assumes a recognition of a need for such a product. With the modish success of Peters & Waterman's (1982) review of the practices of business excellence within the US, and de Bono's exposure on TV and in popular management literature, there seems to be an increased willingness in business and public service industries, to make PS part of in-service management development. This interest in PS is largely channelled into the creativity aspect of PS, particularly synectics and brainstorming - an area which unless underpinned by structural PS techniques converting creativity into reality, serve only to isolate PS into being just another interesting social experiment, and to emasculate its potential for achieving functional and personal changes within organisations.

Peters & Waterman (1982) observed that:

> "Creativity is thinking up new things. Innovation is doing new things... ideas are useless unless used. The proof of their value is only in their implementation. Until then, they are in limbo."

A key problem of business seems to be innovation (doing new things), unfortunately the "organisation" tends to "kill" the change-agent (Peters, 1986), which perhaps explains the attraction of self-consciously "creative",

and therefore non-threatening PS to organisations which
naturally prefer stability to stressful, perhaps
bloody, innovation.

Unfortunately this attitude to PS is a continuation of a
prevailing attitude toward education, it seems as though
we have two dichotomous arguments around the basic idea of
developing or acquiring what de Bono (1982) calls
"operacy". de Bono defines operacy as the "skills needed
for doing."

The traditional approach suggests (as discussed earlier in
Chapter Three) that the skills of operacy are implicit
within the acquisition of what Bernstein (1975), Young
(1971) and by implication, Illich (1973) would call a
hierarchical structure of knowledge. The result of the
traditional approach has been to separate the thinker from
the doer, with an implicit valuation of the thinker as
being of higher status than the lowly doer.

Operacy has a lower status than creativity within our
culture. Thus teaching PS as a basic operacy skill often
goes against prevailing organisational culture (as some of
the 1986 NEBSS residential feedback, showed).

This cultural dichotomy in terms of achieving PS operacy
is partially explained, I feel, in terms of what was
originally seen as two different approaches to thinking:
the Gestaltist and the associationist, both of which deal
with different types of problem.

The Gestaltist approach is concerned with the creation of

novel solutions to new situations, and the associationist
is concerned with the application of solution "habits"
from past experience. The importance of the Gestaltist
approach lies in the problem of learning transfer.
The Gestaltist approach describes two types of thinking:
productive and reproductive. Productive thinking in
creating a new solution to a problem produces a new
organization or structure, whilst reproductive thinking
simply reproduces old methods and routines. This
distinction can be summarised as the perception of
implicit structure within the problem, versus the
imposition of structure irrespective of the problem.

The particular achievement of de Bono has been, I
feel, to usefully combine elements of both types of
thinking with aspects of Gordon's work in synectics
(1961). By renaming productive as "lateral" and
reproductive as "vertical", and creating illustrative
metaphors and exercises ("The Use of lateral
Thinking",1967; and "The Five-Day Course in Lateral
Thinking", 1967) de Bono has managed to make accessible
"lateral" thinking by pragmatic use of a
"vertical"/reproductive approach, accepting the way in
which perception uses patterns to process information, and
demonstrating how it is possible to escape from an
established pattern and when appropriate, to switch into a
better one:

"Lateral thinking can be precisely defined as
pattern-switching within a patterning system.. in

ordinary terms we can describe it as the ability to

look at things in different ways."

de Bono's method seems to be based upon the unacknowledged

use of two approaches.

From Gordon (1961):

"Psychological states such as empathy, involvement,

play, detachment, and the use of irrelevance are ..

basic to creative process but they are not

operational.. the Synectics mechanisms effectively

increase the probability of success when creativity

is called for. They draw the individual into the

psychological states. The Synectic process involves:

(i) making the strange familiar;

(ii) making the familiar strange."

In (i) Gordon refers to a natural tendency to do two

things: firstly to analyse a problem (make the strange

familiar) and secondly to force its strangeness into an

acceptable pattern "within (the mind's) private geometry

of bias" - which in turn warns us about the tendency

toward functional fixedness (Duncker, 1945), specifically

illustrated by de Bono's Jelly-tray analogies (1969).

In (ii): "making the familiar strange" Gordon lists

four synectics mechanisms, each metaphorical in character:

Personal, Direct, Symbolic and Fantasy analogy, describing

them as "specific and reproducible mental processes, tools

to initiate the motion of creative process and to sustain

and renew that motion." Gordon warns of the romantic and

popular prejudices against such a mechanical reduction of

human creativity. But as de Bono was to do later

on with his Cognitive Research Trust (CoRT, 1976) teaching

materials, Gordon points out that synectics consciously

intends this very mechanization. These mechanisms are

thus defined by both de Bono and Gordon as tools and, as

such, subject to conscious and deliberate use.

The second unacknowledged approach, like Jackson

(1975) and Kepner-Tregoe (1981), consists of the

application of suitable tools to process problems

effectively.

de Bono offers and illustrates a bewildering armoury of

potential thinking tools:

Other Person's Viewpoint: OPV;

Plus, Minus and Interesting: PMI;

Consider All Factors: CAF;

Consequences and Sequel: C&S;

Alternatives, Possibilities and Choices: APC;

Aims, Goals and Objectives: AGO;

Examine Both Sides: EBS;

Target/Task, Expand/Explore, Contract/Conclude: TEC;

Agreement, Disagreement and Irrelevence: ADI;

inFormation In/Out FIFO;

High/Low Values: HV/LV;

Find Other Ways: FOW;

Purpose, Input, Solutions, Choice, Operation: PISCO.

- Each of which are implicit within most explicit problem-

solving approaches. Apparently his general policy is to

"produce a total picture by overlap rather than

building up a hierarchy" (1982).

However, one can't help but note the flaw in such a

method, as the clinical psychologist, David Lewis (1983)

points out:

"the more steps you have to take in order to solve a

problem, the longer you require and the greater the

probability of error. By reducing the operations to

a minimum you not only arrive at an answer faster but

decrease the chances of mistakes."

A characteristic student response upon being presented

with a problem is one of fear and anxiety. Bruner (1964)

commented upon the tendency for functional fixedness to

appear in situations where subjects are in high drive or

anxiety states, states which are present for many of us

when a real-life problem situation appears. Under such

circumstances, he suggests the therapy-like advice of a

list of aids for problem-solvers. Clearly the longer the

list of potential operations or steps leading the problem-

solver toward the solution, the more extended the anxiety.

The importance of anxiety-reduction was itself

acknowledged in the British Army's development of problem-

solving drills for combat, strategy and administration in

the Second World war; de Bono's PISCO (Purpose, Input,

Solutions, Choice and Options) and associated tools thus

tend to look extremely derivative in terms of the old

military staff appreciation system: AFCOP (Aim, Factors,

Courses Open, and Plan). The development of reproductive

or even productive drills is itself hardly new. From

Wallas's (1926) four-phase introspective method

(preparation, incubation, illumination, verification), to

both Duncker's (1945) tumour-problem and Polya's (1957)

mathematically-derived Gestaltist sequences, working

backwards from the goal and forwards from the givens; it

has all been said before.

Perhaps the ultimate PS system is that of the "New

Rational Manager", by Kepner and Tregoe (1981). This

system is generally applied in industries involved in

process-manufacturing to a high specification, like

aeronautics, electronic engineering and film-processing.

It is unique in offering the possibility of logging three

realities (past, present and possible, future operations)

and of facing up to the reality of culture in

organisations. Kepner-Tregoe (KT) is based upon seeing

the problem as a deviation from the norm. Interestingly,

Kepner-Tregoe is applied commercially within Kodak (UK)

and it is part of the company's NEBSS Human Resources

Development curriculum to extend the KT culture downwards

to supervisors in production, instead of being purely a

structured reporting mechanism from line management

upwards. The difficulty of dealing with process on three

levels has led to the development of problem-formats,

sequenced to ask appropriate questions. I did notice,

however, that the most-used aspect of KT is the problem-

analysis structure linked with an inter-shift "quality-

circles" approach. KT is taught to people within the
context of real case-histories within their own
manufacturing process. To this extent, unlike Jackson and
de Bono it is framed within a practical context and
culture with which the in-service student has no problems
of identification, as long as he is familiar with the
contextual technology of the case-studies.

Unlike Jackson, de Bono has created illustrative material,
literature, and exercises. However the context of PS for
both remains theoretical, both failing to a different
extent to perceive the potential of the learning group as
a team and the four learning medium factors identified
earlier in chapter 7, (action, ownership, results and
language) necessary to develop and enhance teaching of PS,
and thus transfer out of a book or a classroom, and into
an individual's functional repertoire.

de Bono uses groups as a mechanism for enhancing feedback
from individuals and maximising discussion, implying an
opportunity for individuals to break out of role-sets, and
exercise new roles (1978).

Surprisingly de Bono prefers the work of the groups to be
oral, feeling that the thinking of the pupils is
restricted through writing:

> "writing was inhibiting. They became individuals
> again.. in the CoRT lessons they are not handicapped
> by having to express things in writing."

This insistence in keeping the process purely oral is I

feel a reflection of his failure to appreciate the importance of writing process down upon paper. After all, if you can lay out a problem according to some analytic structure on a sheet of paper, you are effectively modelling it symbolically as well as debating the utility of your use of process, with yourself. As an educational psychologist, Bruner holds that mental development passes through three main stages of readiness: the enactive, the iconic and the symbolic. Without writing, we limit the acquisition of PS operacy to the first dimension; the symbolic writing and the iconic modelling, are needed to complement the enactive, action aspect to fully develop the potential of operacy. I feel de Bono, like Jackson, has underestimated the problem of culture and language. The problem at the centre of some individuals' unwillingness to employ systematic process is one of jargon or more accurately, of language. Whorf noted the eskimo had a different name for various types of snow, and that the Hopi indians had only one word for flying objects which were not birds. It is a fairly reasonable assumption that through evolutionary changes, the language of a culture will accurately reflect the aspects of reality about which exact information and communication are absolutely necessary.

As long as PS terms remain jargon, then the introduction of training within this area will continue to be a form of cultural intervention.

We need to develop operacy on all fronts: through both oral and written structures, through a learning medium which uses group dynamics to create training contexts where students have a feeling of ownership through action, identifying with results, and expressing themselves in language which is a product of that temporary learning group's PS culture.

Teaching operacy is a form of cultural intervention. If the developers of PS or problem-handling fail to develop a medium which exercises process on all three Brunerian levels, and ignore the basis of culture, which is people in groups, then the pursuit of operacy remains purely an interesting art form, or as Illich would term it another form of "treatment". Although Attenborough (1979) is primarily a zoologist, it is worth noting his definition of culture as:

> "This ability and readiness to learn from your
>
> companions results in a community having shared
>
> skills and knowledge, shared ways of doing things."

If we accept that introducing operacy in the form of PS skills is a form of cultural intervention, the social aspect of development must be a key as to whether it becomes part of an individual's operational repertoire.

It seems that only Feuerstein's work in Israel (1983) among backward children gets to grips with the cultural and social aspects of developing cognitive skills. Feuerstein's understanding of the function of the family in providing what he terms "mediating learning

experiences" to enable children to develop basic cognitive equipment. Unfortunately, the version of his system being marketed by Curriculum Development Associates, an American company, within this country have excluded involving the family or developing temporary learning groups to create an intermediate learning reality where the new operacy skills and their language can be developed and realised. There seems to be little point in having ideas without communicating them, and even less point in trying to communicate these ideas in a purely private language.

Accordingly, although useful, where Jackson tells you to baldly apply his system to your own life, as the basis of illustration and exercise, de Bono's problems serve as metaphorical illustrations, lacking a tangibility, plasticity and translation into real action or life - for de Bono and Jackson, the learning group is purely a useful administrative mechanism. Unlike Jackson, de Bono fails to see that learning from PS doesn't end until actions are completed, and the use of process and confirmation of its utility is judged upon some operational criteria.

Both fail to see the teaching of PS processes within its social context, as a kind of cultural intervention: that the acquisition of such processes with the intention of operating them introduces new language, perspectives, sensitivity, new social roles for the operators as they become practitioners, but above all, a sense of problem-ownership.

In considering the achievement of this project, its success can be measured by its developing practice.

Within the Junior Army, this approach has influenced training and education within the cross-over area shared by communication skills and leadership development, notably within the Junior Leader Regiments of the Royal Engineers, Royal Artillery, Royal Signals, Guards' Division, the Army Catering Corps, as well as at its source: the Royal Corps of Transport.

I was introduced to Kodak (Manufacturing) via a one-day microtask slot within the pilot "Team Management Skills Development Programme", National Examination Board for Supervisor Studies (NEBSS) course (managed by Harrow College of Higher Education).

The feedback from the microtask session "matured" six weeks later, by students' consistent application of the processes taught, in the face of bemused Kodak senior management observing the Outward Bound component of the course.

The Kodak delegates had alarmed the Outward Bound tutors during the reviews of the first two days of outdoor projects, by introducing the lack of time allowed to (as they put it) "do an AFCOP" on the problem. By the third day, the delegates got together and determined to renegotiate their course expectations, refusing to be pushed into further outdoor projects without adequate time to prepare, build models, plan, rehearse and train. Being

professional, the Outward Bound tutors modified their
approach by using the remaining outdoor projects as the
delegates required. The course led to the delegates
teaching the tutors!

The success of the microtask approach and its perceived
relevance to the Company's "People" strategy of developing
first-line management, led to my being directly consulted
upon my views on transferring PS process back into the
workplace.

As a result, I ran two residential events in 1987 for HCHE
with mature, part-time, business students. I experimented
with a change of format, reflecting an interest in
directly applying process upon real management problems.
These events were in three phases: in the first phase,
students were asked to come prepared with a written case-
study of a real problem within their full-time working
environment, which they felt that they owned. The second
day saw a day of microtask PS process development,
concluded on the morning of the third day, by the "Cross
the Gap" macrotask. In the final phase, syndicates were
formed to review each others' problem case-studies,
selecting the "meatiest" for a full process-treatment,
culminating in a syndicate presentation of:

    Problem-script,

    AFCOP,

    Tactical Thinking analysis, and

    Plan-Grid.

The unselfconsciousness with which the PS processes were directly applied to the context of real owned management problems, made these events very exciting in signally verifying that the processes taught had become operational for the students. It was even more interesting for the students who owned the problem!

The initial difficulties that students often had in scripting, and classifying problems which they owned, led to my having to develop an introductory approach to scripting problems.

This idea of problem-ownership as the pre-requisite for learning to use process, which then leads to action and results, has meant that the project has taken a big step forward: directly connecting the classroom to the workplace context, arming the student with the language and skills to improve working roles and conditions. Kodak has recognised this development by including this approach (now titled:"Tactical Problem-Solving" - TPS) in its expanding Personnel Development Programme, as well as allocating more time for this component within its NEBSS programme. In 1987, two courses of Kodak NEBSS students applied the processes to their jobs (as per Annex I).

The next Kodak development, will be to extend the TPS programme to include developing materials for students to teach the processes to their teams upon return from the NEBSS course. A longer-range development will be to examine the existing outward-bound component of the NEBSS

certificate, to introduce macrotask aspects into the curriculum for Kodak.

The theme of success has run consistently throughout the project. The microtasks and macrotasks successfully take individuals and teams into that no-man's-land of anxiety which follows the recognition of a problem, and develop new confidence in the use of process, based upon the positive memory of successfully overcoming the apparently impossible, through the use of those processes.

Without the appreciation of those audiences, the soldiers, the supervisors, the managers and the students, some of whom became friends, the project would have had very little reason to have gone beyond theory.

It looks as though the investment in the social aspects of the team, as a vehicle for developing problem-solving processes, may be the right product, at the right time. The limitations of being either context-free (de Bono, Jackson) or technology-tied (Kepner-Tregoe), suggest that there is a need for learning these tactical skills through co-ordinated team-action upon problems which students own, expressing these processes and results within an appropriate task-handling language.

de Bono was certainly mistaken when he said that "there is not much you can do with a simple process except to state it."

Chapter Nine: Final Review.

In this last chapter, I look back over the thesis, over 5
years of action-research, of step-by-step modification
through feedback, and discuss my own learning,
achievements, and conclusions.

A major piece of learning was in the area of problem-
design.
My identification of the medium of learning as being the
actual message-carrier, paralleling Mcluhan's
(1964) dictum, led to the generation of a kind of
technology of learning-problem design, based upon the
skills criteria within the PALS (Profile Analysis Leader
Skills) and the six macrotask design factors.

I recently led a course design project for British
Telecom's new outdoor management development programme for
project leaders.
I found that it was possible to delegate microtask and
macrotask design to other trainers, and for them to
generate new problems, once I had identified the main
obstacle to learning as students' tendency to learn the
problem and to forget the processes that they are designed
to illustrate and develop. This last maxim proved to be
useful in future learning problem design.

I learnt that the original focus upon leadership and
leaders was largely a red-herring, and that one of the
original "equations",

$$\frac{\text{Task}}{\text{Teamwork}} = \text{Success}$$

in introducing teamwork into an equation relating tasks
to success, made the problem of achieving consistent
teamwork a primary motive for the learning of problem-
solving techniques which could translate into the
workplace.

My introduction and development of the learning teams as
useful, originally in offering a context and motive for
the learning processes, led to the identification of what
I came to see as the key ingredients of:

> action,
>
> ownership,
>
> results and
>
> language.

This context of the learning team and my developing
experience as a management-consultant, led me towards the
view that introducing problem-solving procedures was a
form of cultural intervention.

I realised that the temporary culture of the learning
team, created initially as a means to a problem-solving
learning end, was itself transferable in the form of team-
building, out of the classroom and into the workplace.

The theme of change, of the need for teams to learn
together in order to manage and initiate change in the
workplace was a recent development.

The resonance of problem-solving language as a task
and change-handling culture-carrier became clearer with

the identification of the key ingredients of change:
ownership of problems, commitment to results, the
resolution of problems through action, and the primacy of
a language which turned abstract procedures into an
everyday reality.

The learning team helped individuals to recognise the
advantages of synergy, and of teamwork, through
experiencing it. The learning team helped individual and
teams to turn away from a cynical "blame" culture of
dependency and subsistence, toward a culture of actors and
participants with personal responsibility for events. The
experience of the learning team was one of a safe,
temporary bridging culture where the need for clarity in
objectives, processes for handling problems, communication
and feedback was clear.

The new economic "enterprise/entrepreneurial" culture
(Goldsmith & Clutterbuck, 1984; Peters et al, 1982, 1986)
has led large commercial and public service organisations
to recognise the need to shift in emphasis from being
mainly "role", to "task" culture (Harrison, 1972; Garratt,
1987; Lessem, 1985); shifting in order to become customer
and market-sensitive, with the need to form ad-hoc project
teams with a consistent way of working which enables them
to solve problems quickly and efficiently, to respond to
new situations, teams which are dissolved when the task
ends.

The research underlines the validity and success of the
learning team as the mechanism for change in two ways:
initially by examining the enhanced performance of young
Junior Leaders at the end of their macrotask exercise, and
secondly by the success of the Kodak NEBSS programme in
seeing the implementation of the problem-solving process
into supervisors' working lives.

The effectiveness of the use of the learning team as the
mechanism for change, is shown in my recent experiences
within an international company implementing a major
quality improvement programme. Follow-up research within
this company was puzzled at employees' consistent failure
to implement the problem-solving processes on everyday
problems.

Work   Learning

?
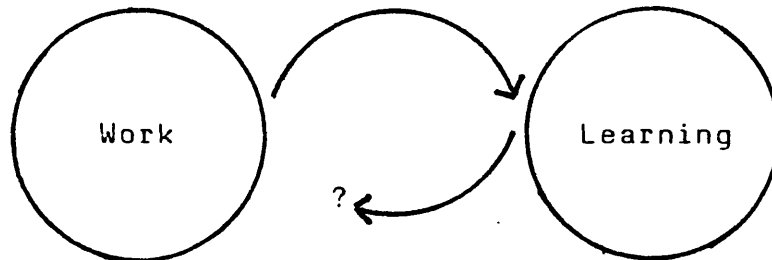
This lack of implementation was all the more galling in
that the training programme's initial evaluation had shown
enthusiasm for the training, it was well-managed, the
material was well-structured, the learning medium of case-
studies seemed ideal. The follow-up research found little
evidence for implementation of the processes.

My work with Kodak's NEBSS programme demonstrated
unselfconscious translation into the workplace and into
other training situations, showed that the learning team
is a powerful mechanism, and context for learning to
change.
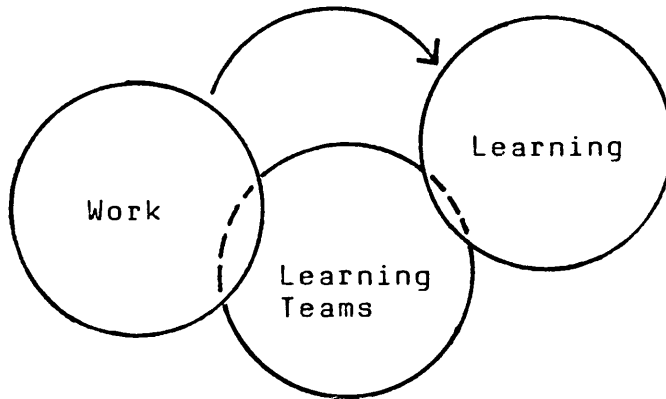
The centrality of the essential problem-solving processes in its various disguises is astonishing.

It seems as though many people have managed to build the same wheel to run in different environments, each under the impression that no-one else had ever done so.

I have found the same, simple heuristic formulas everywhere, from thinking "gurus'" writings, in mathematics, policy/strategy formulation, commercial in-house Quality enhancement and organisation development programmes to infantry section commanders' combat aide-memoirs.

The simple message seems to be an elaborated AFCOP process (consider your aim, list and categorize your factors, generate courses open, choose one as your plan). The whole process functioning as a means of suspending judgement until necessary to make a decision, avoiding fitting inappropriate solutions to problems, defining the problem as the gap between where one is, and where one wants to go.

The centrality of the problem-solving process as a learning process was a surprise. The use of problem-solving as a way of learning led me back to my PGCE days

at Avery Hill College in 1979, and my thoughts about the
cultural misidentification of the process of education
with content (Barnett, 1972; Holt, 1965; Pirsig, 1976;
Illich, 1973).

There was a stage in writing this thesis early in 1987,
when I became seriously interested in the sociology of
knowledge. My achievement has been to work from a specific
environment with a specific difficulty, and by adopting an
outsider/ research viewpoint I have contributed to mapping
aspects of our cultural map within the area of leadership,
leader development, and its relationship with problem-
solving. This work began with an interest in the
transmission of leadership culture within the British
Army: the misidentification of style with content,
qualities with skills. This led to my making a strong
connection between social modelling and poor teaching
method as a retreat from skill to style acquisition
(Musgrove et al, 1972) with the phenomenon of the Armed
Forces as a cultural "wash" legitimising individual
members of marginal social groups' movement up the social
ladder (Enloe, 1980; Ellis, 1982).
This perspective linked strongly with later researches
into experiential learning in the outdoors, selection
systems, and learning problem-design. I noticed in 1981,
that only a small minority of Junior Leaders were capable
of actively transferring Adair's insights into successful
task action on exercises. The failure of the majority to

mirror this learning, or to successfully complete outdoor
command tasks led me to think about the "selection"
inheritance of prevailing leader development, and the
weaknesses of such style approaches. I had several
options:

1   Change the exercise tasks.

2   Change the learning in content, style and
     delivery.

3   Do both.

I realised that I was running a disguised officer-
selection system. From this realisation came the interest
in leadership skills. I was involved in two provocative
INSETs which led to some very creative networking, and in
turn, developed useful insights into problem-design. Both
INSETs and personal observation outside the research,
whilst a member of Airborne Forces, showed me the
influence which previous experience of rites of passage
(1983), or personal crises had in determining the design
of learning problems. Whilst accepting my own weakness in
duplicating this behaviour in my own design of problems, I
was determined to step out and use system to design
learning problems which would help me to lead an escape
from the design lottery of previous powerful crises and
experiences. The INSETs motivated me to develop the
micro/macrotask system through creating an informed demand
for experimental materials from other instructors within
the Junior Army and later, higher education. The interest

in leadership skills led to the development of problem-
solving and the identification of the obstacles which
defeated the implementation of problem-solving processes;
and the realisation of just how threatening some
individuals found the teaching of operacy with its message
of autonomy and personal responsibility, destabilising
comfortable, cynical myths of social and political
dependency.

I identified the key obstacles to operacy, the need to
overcome previous learning experiences with the use of a
neutral, uncontaminated learning environment without the
resonance of previous failure and old roles, in order to
develop and practise fundamentally new task and social
behaviours.

I demonstrated how it is possible to take a systems
approach to training and cognitive problem-solving
research, and to integrate them into a successful
practical teaching method.

As part of the process of focussing the research in this
area, the observation of students' tendency to learn the
problem and to forget the process the problem was designed
to illustrate and develop, led me forward into deeper
thought into learning problem-design, into the
developmental microtask learning system and the practical
arena of full-scale macrotask exercises in the Forest of
Dean.

The Junior Leaders' expectation of being able, at the end

of training, to integrate into a working team and to have
had sufficient training to be able to lead such teams was
a useful motivator for leadership development. Another
key factor was the recognition within the military culture
of the price paid in actual lives when mistakes were made
in observing process, and the availability of post-
Falklands anecdotes supporting the usefulness of systems
which suspended judgement, especially under stress
situations.

The idea of the learning team was developed from Bales'
theory of the learning group as a model of what goes on in
the individual learner. I realised that if the group
could all learn a new way of doing things and apply them,
together - the individual would be more likely to include
the new way of doing things within their operational
repertoire.

From observing the INSETs, I witnessed the powerful
tendency of groups to "groupthink" the task, to re-
interpret the task's failure by turning failure into
success, to storm problems with their characteristic,
preferred modes of problem-solving. This lesson, seen
many times, motivated me into being absolutely clear with
learning groups about what we were going to do, and how we
were going to do it. I discovered from observing Keith
Jackson how crucial the first 30 minutes were, when
introducing new procedures. If you did not establish the
process within that time, the microtask sessions became
entertaining tests of personal, temperamental approaches

to problem-solving; where the tendency to see the problem
as one of the best "fit" would prevail, either limiting
our exploration of the problem-solution to items which
supported our values or self-image, or searching our
repertoire to "throw" bits of it, uncritically, at the
problem. I found that students' experience of
brainstorming tended to support storming the problems
without the using process to determine the type of problem
to be solved.

The learning team established the need, the hunger
for task success as a key motivator, encouraging learning
in new situations. This led me finally to doubt the use
of learning by experience when this meant learning by
reflecting upon our mistakes, which seems to establish
post-rational insights without the skills to prevent
failure. It seems to be a good idea to start as you mean
to go on.

Looking back over five years of research provides me with
a perspective to see more clearly the things not included
within this research. The omissions come from three
sources:

1   Data which though collected, and analysed, was not
     explicitly included within this thesis.

2   Collected data which was not analysed.

3   Data upon aspects of social activity which was not
     collected systematically.

The first omission stems from a need not to exclude data,

but to keep to the main area of the research. I
constantly found myself becoming interested in pursuing
such major alternative themes as the sociology of
knowledge, and the social anthropology of organisations.

The second omission stems from a major methodological
drawback of action-research, combining (in my case),
aspects of ethnographic research and participant
observation. There is a kind of dramatic tension between
qualitative and quantitative data in this kind of action-
research. The approach can lead to a primary interest in
continuing the journey, rather than in mapping the route
for posterity. Do you build a better picture of where you
are?, or do you look for the tangential data which gives
you the next destination, allowing you to continue the
journey?

I did find that developing the questionnaires out of an
"open" question approach and into .a relatively closed, ·
multiple-choice questionnaire design was useful in making
an analysis of where we were, at various times.

I discovered, inadvertently, that it also helped students
to hang their experiences onto the coherent structure of
the questionnaires, and to carry them away with them, but
the relatively closed, focussed, multiple-choice,
quantitative approach did not generate the kind of
exciting, expressive, authentic data which posed new
questions for me and helped me to understand how students
felt.

I found myself preferring the qualitative data derived from the "open" questionnaires, agreeing with Lacey (1970), that the qualitative data generated by questionnaire and recording cannot be usefully processed by anyone who does not share the insights of the researcher.

The volume of material collected, fills a four-drawer filing cabinet and six tea-chests. This material is enormously varied, including fieldwork diaries and notebooks, reflective reviews on tape used for making observations for reference, over 200 exercise-books of pupils' work, six large lever-files of Junior Leaders' feedback questionnaires upon the microtask and macrotask stages, two files of macrotask exercise reports, and over 60 hours of video recordings of live microtask sessions, seminars, INSETs, macrotask exercises, and interviews. And this is not an exhaustive list.

The final type of omission reflects my capacity to be surprised by events. Fortunately by 1984, I had realised the usefulness of a portable VHS video operated either by myself or Phillip Stonier, the possession of a small Sony tape-recorder, and of interviewing participants after an event.

In consideration of the question of "just how reliable and valid are my observations?", I find myself answering by saying that I managed to go beyond simple theory-building: the production of ideas and concepts subsequently matched against critical observation. I did this by building a

coherent, consistent structure out of my observations, testing it with different audiences via different instructors and questionnaires, and finally through implementation within a new and commercial environment.

My recommendations for trainers would include saying that it looks as though most of the necessary research has been done, it is purely a matter of linking it all up into a coherent whole. Be clear about your processes and values, learning to manage the "stress gap" experienced upon the arrival of a problem through to its resolution in planned action. The management of that stress, through practice in process, is central to learning. Managing this learning in teams allows us to respect each other, and to learn to share in the task culture.

The last 5 years has been very exciting, teaching me much about myself. Some instances stand out, I particularly remember towards the end of the first complete run-through of the microtask approach, sitting down at the back of the classroom, as the triads of Junior Leaders systematically worked their way through the Cobex microtask (can of beans). Everything seemed to be working out, but I felt as though I should be doing something. I suddenly realised that the Junior Leaders didn't need my help anymore to deal with further problems. I found that I was very bored not being needed either to comment, reassure, support or give guidance. I realised that in this type of

learning situation, at this stage, I was potentially the
most disruptive person in the classroom, and that if I was
going to continue down this route of developing
individual operacy and autonomy, then not being needed
meant that I had done a good job, and was something I was
just going to have learn to feel good about.
Another key experience was witnessing Peter Lewis's
classic misidentification of leader skills, when the skill
of recognising a cantilever situation was in this case, no
more than a working metaphor for the idea of a skill
identified, practised on a small scale, then realised
upon a larger scale, and not a leader skill in itself.

Another key learning experience, was the realisation
that if the microtask idea was as good as people seemed to
think it was, then it might have applications outside the
Armed Forces. A particularly powerful experience was
deciding to hand over the responsibility for this area and
my team, to someone else, in order to work on this thesis.

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QUALITIES LOOKED FOR AT RCB

1. Planning Ability. The ability to appreciate factors, and
    arrive at a reasonable plan. This includes grasping the
    essentials of a problem, allotting priorities and allowing
    for possible contingencies. This ability can be detected
    in WRITTEN PROJECT, COMMAND TASK, INDIVIDUAL OBSTACLE COURSE.

2. Practical Ability. The ability to deal with concrete factual
    problems in a sensible manner; in other words commonsense.
    It is demonstrated in COMMAND TASK, INDIVIDUAL OBSTACLE COURSE,
    WRITTEN PROJECT.

3. Physical Ability. The ability, robustness and determination
    to carry on even when tired. It is shown during INDIVIDUAL
    OBSTACLE COURSE, COMMAND TASK.

4. Coolness. The quality of imperturbility. Natural early
    nervousness should ease and the emotions be brought under
    control. It is the ability to tolerate stress, and is lacking
    if performance deteriorates under testing. It can be
    identified in all tests, but particularly during COMMAND TASK,
    PROJECT DISCUSSION, LECTURETTE.

5. Sense of Urgency. An awareness of time and formulating an
    effective reaction. It is not simply continually mentioning
    of the need for action. It is shown during COMMAND TASK,
    INDIVIDUAL OBSTACLE COURSE, PROJECT DISCUSSION.

6. Dominance. The ability to impose one's will on others. The
    method nor the consequences are not rated under this
    characteristic. It is revealed in COMMAND TASK, DISCUSSIONS.

7. Liveliness. An animated, cheerful and alert character is
    graded adequate. A colourful and stimulating person is graded
    GOOD or STRONG. GROUP SITUATIONS, LECTURETTES show this trait.

8. Initiative. Simply the ability to act independently. All tasks
    reveal this ability, but is especially evident during
    COMMAND TASK.

9. <u>Determination</u>. The will-power to achieve the purpose. All
   tests can indicate this, but INDIVIDUAL OBSTACLE COURSE is
   the best indicator.

10. <u>Military Compatibility</u>. The ability to become attuned to the
    military life. It is shown in all GROUP SITUATIONS, but comes
    out mainly during interviews and a study of background.

11. <u>Sense of Responsibility</u>. The ability to distinguish between
    one's own and others' interests, and then to act for the
    common good. All tests can be used, but a study of background
    is especially revealing.

12. <u>Awareness</u>. Interest in one's fellow men and the world in general.
    This is seen during DISCUSSIONS, LECTURETTE, GROUP SITUATIONS.

13. <u>Quality of Personal Relationships</u>. The ability to promote
    loyalty and respect. This is usually the result of modesty,
    sincerity, warmth, integrity, tolerance, depth and straight
    forwardness. All group situations show this.

14. <u>Range of Personal Relationships</u>. The ability to get on well
    with a variety of people. All group situations reveal this.

15. <u>Maturity</u>. This quality is relative to age, and is demonstrated
    in all situations.

In-Service Training/Leadership Course 6-8 June 1983 - Feedback to Syndicates

1. Introduction

The theme of the course was that of 'leadership as a skilled performance' (see Annex A). In order to underline the practical interpretation of leadership, a particular teaching model was suggested (Annex A page 2).

> Aim
> ↕
> Enabling Objectives
> ↓
> Microtask
> ↓
> Macrotask
> ↕
> Debrief
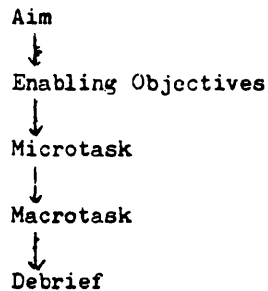
This model introduced a little confusion, especially for students who did not receive the 13th April instruction. However, to pre-empt future confusion let's cover the jargon and concepts involved in this teaching exercise.

2. Jargon

Aim   - The specific leader skill to be illustrated.

Enabling Objectives   - The simple teaching points which cumulatively achieve the aim.

Example: Aim - Problem solving

> Enabling Objectives: A)   State the objective.
>
> B)   Consider the factors.
>
> C)   Develop strategies.
>
> D)   Select best strategy.
>
> E)   Structure strategy into a plan.

3. Concepts

A. LEADER SKILLS

Leader   -   'One who leads, or goes first' (O.E. laedan - to lead, lad - a way).

Skill   -   'Craft or accomplishment' (O.N. skil - distinction, skilja - to separate).

Skill (Welford 1958, from M Argyle's 'Analysis of the behaviour of an interactor') - may be defined as an organised, coordinated activity in relation to an object or situation, which involves a whole chain of sensory, central and motor mechanisms.

One of its main characteristics is that the performance, or stream of action is continuously under the control of sensory input. This input derives in part from the object of situation at which the performance may be said to be directed, and it controls the performance in the sense that the outcomes of actions are continuously matched against some criterior of achievement or degree of approach to a goal, and the performance is widely adapted to its occasion?

DKH 1

EX THEME

LEADERSHIP AS A SKILLED PERFORMANCE

LEARNING EXPERIENCE

Task ⟶ TASK ⟶ Solution ⟶ Task
Presented   Analysed   Presented   Completed

Debrief Proforma - cover aspects + phases. Making student more critical/skilled in participation and leading.

• Photostats from Argyle interaction model.

COURSE AIM. For DS.

TO PRACTICE DIRECTING STAFF IN PRACTICAL ASPECTS OF LEADERSHIP COURSE DESIGN AND MANAGEMENT.

Enabling Objectives

1. To prov¹'' an overview of the current trends in learning and behavioural theory which underpins much of the current practice.

2. Identify processes actually involved in practical task leadership.

3. Identify tasks appropriate to given geographical locations.

4. Produce an effective assessment procedure, for individuals groups and tasks.

5. Produce a micro-task to illustrate the essential skill/learning process.

6. Demonstrate via a macro task the application of the identified skill/learning sequence.

THE EXERCISE MODEL

PHASE OUTLINE
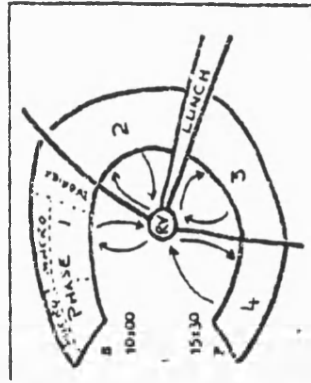
MICRO TEACH – 1N		MOVE TO MACRO LOCATION	MACRO TEACH – 1N		PHASE TWO QUICK '10' ⊕
STUDENTS ARE COLLECTED AT CENTRAL EV	'10' GROUP/ BRIEFING EX DEBRIEF		PHASE ONE '0' ⊕P EX Stop for re-assessment in terms of achieving the Task Aim		EX DEBRIEF RETURN TO EV

TIME ⟶

B. A suggested list of 'operational' and 'teachable' leader skills:

1. Problem - definition (evaluation/discrimination).

2. Solution - framing (decision).

3. Task - structuring.

4. Task - presentation.

5. Performance analysis - use of debrief/feedback systems.

6. Presentation of self - as credible information source.

7. Crisis - recognition and management.

8. Team - control and coordination.

C. MICRO/MACRO - TASKS

Micro - GR mikros - little.

Macro - GR macros - long, also great.

Task   - 'a piece or amount of work set, or undertaken'.

All micro and macrotasks are unambiguous, limited tasks purposely designed to teach. They work by presenting a problem to a team or individual - this leads to activity, which in turn is analysed.

Microtask - teaches the aim and associated enabling objectives (it can be a physically reduced version of the macro) (see COBEX - appendix B).

Macrotask - confirms the aim and enabling objectives via a real-time exercise (see BADON CROSS instruction - Bridge Blow).

4. Recommendations for next course

A. Specific presentation identifying leader skills.

B. Specialists/practitioner presentations upon:

- Leadership within the Junior Army.

- Why do it?

- What skills and standards are practical?

- How and why of assessment.

- What are Command Tasks   )
          Exercises   ) achieving?
          Classroom instruction   )

- Designing leader training - other systems.

- Safety on exercises.

- Access to official training resources, including a basic list of exercise kit plus a related repertoire.

C. More TIME! - to achieve course aims.

- allowing syndicates to 'trials' each others teaching sequences.

- allow video and summative debrief based on student comments.

5. Conclusions - Syndicate Performance

A. Far too many objectives - remember KISS?

B. Syndicates enjoyed themselves TESTING Juniors, but few syndicates taught. Look at the confusing list of aims on the syndicate debriefs.

C. Leadership training is not about demonstrating how clever the DS are - it is about teaching.

D. Tasks were too ambitious.

Victor Newman

VICTOR NEWMAN
Team Leader Cell
MSW
JLR RCT   4/?/??

N.B. Video copy of the actual exercise is available, just send us a
     180 VHS tape.

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Analysis of Student Debrief (VN83TL) - Exercise Burnham Beeches

MICROTASK: "How effective was the microtask at making its points?"

Weak 1 2 3 4 5 Very good
- In order of effectiveness (max 5)
4.25 (syn 4), 4.23 (syn 2), 3.84 (syn 3), 2.97 (syn 1)

MACROTASK: "Did the macrotask make the same points as the microtask?"

Not at all 1 2 3 4 5 Yes, the same
- In order of similarity (max 5)
4.31 (syn 4), 3.76 (syn 2), 3.33 (syn 1), 2.81 (syn 3)

EFFECTIVENESS: "Did YOU learn much?"

No, very little 1 2 3 4 5 Good, quite a lot
- In order of effectiveness (max 5)
4.06 (syn 4), 4.00 (syn 1), 3.93 (syn 3), 3.72 (syn 2)

DEBRIEF: "Did the instructors make sensible remarks about the team performance?"

No, not at all 1 2 3 4 5 Yes, and all to the point
- In order of effectiveness (max 5)
4.5 (syn 3), 4.43 (syn 2), 4.34 (syn 4), 4.31 (syn 1)

EFFECTIVENESS OF SYNDICATES

(Indices compared over average performance per topic)
1.40 (syn 4), 0.47 (syn 2), -0.59 (syn 3), -1.06 (syn 1)

7.0.   [TITLE] - USE OF AFCOP AND OSHSBC TO SOLVE A TASK

Time needed: 4 periods or 2 double periods.

Instructor's Aim: To provide an exercise independent of military knowledge
or tactical expertise, allowing the student to:

1) Think (linearly/laterally) - AFCOP
2) Co-ordinate a simple task within simple constraints
3) Recognise the superiority of the GRID/PLAN system
4) Experience the problems of detailing a task to fellow
   students
5) Learn to criticise individual and team performance,
   and to expect team criticism

1.   GROUND

Any room with a door will do. You can set it up as per annex A.

2.   SITUATION

1) Hopefully the students will realise the need for matches and tin
   opener.
2) The task must be completed without speech, blindfolded and within
   8 minutes from entering to leaving the room.
3) Every item used must go back to its original position.

3.   MISSION

You will enter the room, cook the tear, eat them and leave within
the time limit.

4.   EXECUTION

4.1.   GENERAL OUTLINE: As team decides.

4.2.   DETAILED TASKS: Suggested phasing   1) Entry
                                                2) Action
                                                3) Eat and reorganise
                                                4) Exit

4.3   CO-ORDINATING INSTRUCTIONS

SERIAL	TIME		
1	0-5	Breaks students into teams	Set up classroom/ex area
2	5-10	Gives '0' group	Notes, ask questions
3	10-40	Moves from team to team checking proper AFCOP-type thinking	AFCOP prepared GRID PLAN (TEAM X TIME)
		──────── BREAK ────────	
4	40-45		
5	45-55	Shows first 3 stages of 'OCOP' (AFCO)	Copy into notebooks
6	55-70	Selects a team to present PLAN and rehearse it, each phase timed	Identify main weaknesses, and areas for improvement - which technique is central to success?

4. PLAN GRID (PLAN = TEAM X TIME)

4 Basic Phases: Entry, Action, Eat and Reorganise, Exit

PHASE	TIME	STUDENT 1	STUDENT 2
ENTRY	2.27 mins	Opens door, first in straight to table B, matches out of pocket, moves cooker to desk corner, unrolls, maintaining cooker in position	2nd in, straight to can, opener out of pocket, opens can, folds back lid. Moves to table B, stands at corner of table removes cooker, removes can, lowers onto cooker, puts can opener into pocket
ACTION	3.22 mins	Lights cooker, then hours first bubbles waits 60 seconds - whistles	
EAT & REORG	5.02 mins	Cooker off, moves beans to centre, eats last, spoon returned in can to canteen	Leans can to table, picks up beans, eats first
			Finished spoon, can into pocket - whistles
EXIT	5.16 mins	Leaves first	Leaves second

7	70-85	Presents DS PLAN/GRID	Copy into notebooks Criticise, award DS PLAN/GRID
8	90	Pack up, look forward	Notebooks
9	-5	Serialise of IAPCOF becomes second	
10	5-30	Issue PP	Orders written up for can Plan Grid moves into 4.2 Detailed Tasks Teams give orders and complete task
11	30-95		
12	95-96	Pack up, look forward	

1. SCHEME OF LESSON

Task A: Can of beans, bucket, string, portrayal of water (half full)

Desk 3: Marmite, matchboxes, gas cooker, teaspoon

Students: Can of beans, tin-opener, matches

2. AIMS AND SKILLS

As seen

2. Tasks for Students

ID AIMS OF — Should look like this:

1. AIM

To cook can and eat beans within 6 minutes without speech.

2. FACTORS

All the kit in front of us, plug time limit, team members, lack of matches, tin opener (which team provides)

3. COURSES OPEN (1 x DIMENSIONAL GRID)

Elements:

Item Numbers	2/3	2/3	2/3	2
Water				
Bucket				
Marmite				
Matchboxes				
Gas cooker				
Can of beans				
Spoon				
METHODS				

Which is the best solution? Against the AIM, and 4 is the method with the least count of personnel, and equipment.

[illegible heading]

1.GROUND

(a) Search area of 80m x 250m, S of B4226, LH area N of B4226.

(b) Boundaries: North - B4225

South - Wire fence 250m S of B4226

West - Along stream where it leaves B4226 at 636.125 open to a boundary fence.

East - Fence running approx. NE/SW, starting at fence corner 60m E of where stream leaves B4226 at 636.125.

2.SITUATION

(a) Soldier accidentally contaminated in nerve agent exercise.

(b) CASEVAC ambulance treatment at Upnatch House Jn (618.122).

(c) Casualty seen moving along B4226, E towards Hospital (644.126)

(d) He is badly contaminated, last seen in NBC suit.

3.MISSION

You will establish a RATO 'T' LZ, find and evacuate the casualty quickly.

4.EXECUTION

4.1 Gcr.Cutline - as team

4.2 Detailed Tasks/Suggested Phasing (any order)

    (i) Mark LZ

    (ii) Construct stretcher

    (iii) Move casualty to LZ, immediately upon discovery.

5.SERVICE SUPPORT

NBC suits + Respirators, LZ panels, Ponchos, torches, whistle, string, national 88030 held by PS.

6.COMMAND & SIGNAL

- as team

PS GUIDE/TEAM MUST -

1. Wear suits and respirators when handling casualty.

2. Organise priorities - look at suggested phasing, there's no need for everyone to make the stretcher and mark the LZ.

3. Have system of guiding the stretcher team plus reliefs to LZ.

SEARCH

DITCH

SEARCH AREA

STILE

B4226

STILE

┤┤ EMBANKMENT
-v-v- FENCE
▣ GATE
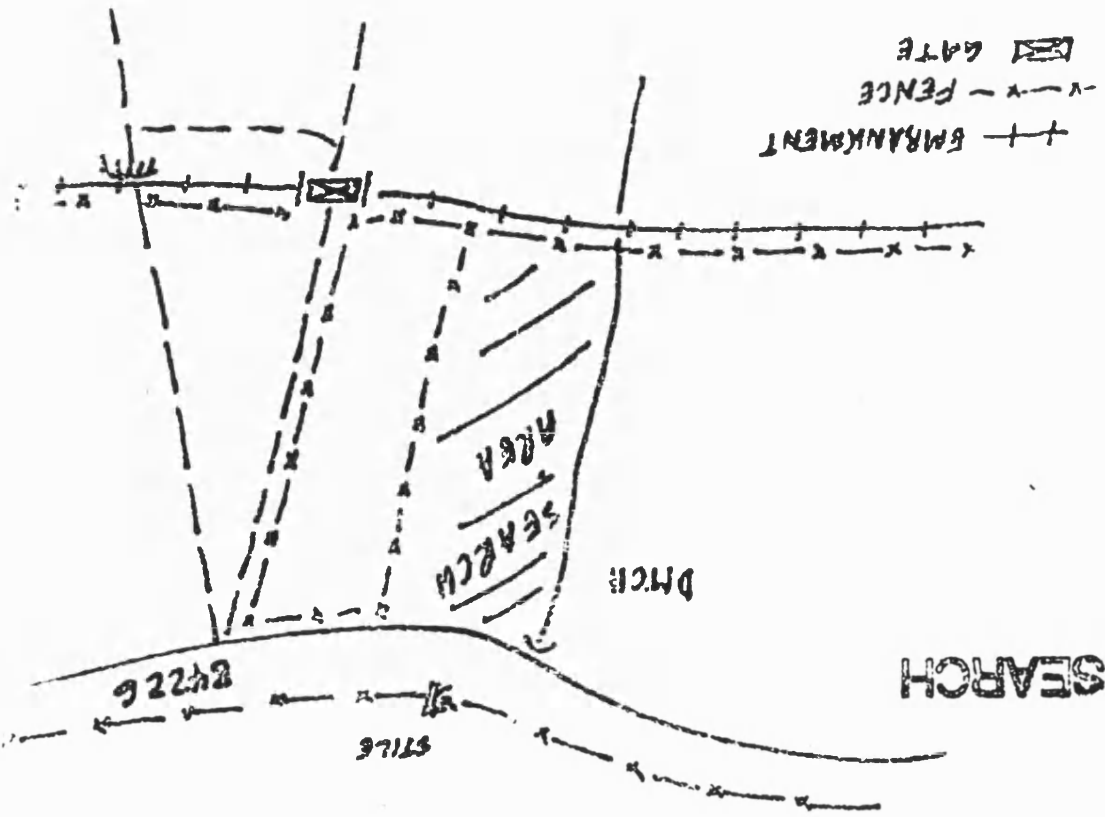
Syndicate 1 - Analysis of Student Debrief - Comments

Aim: "What did the instructors try to teach you?"

Teamwork (7)
How to cross a swamp and river (4)
Control (3)
Organise (2)
? (2)
Practice leadership skills (2)
To climb a tree and make a mark (2)
Leader to detail specific tasks (2)
Planning and preparation (1)
To work under stress (1)
Use your brains (1)
Work under pressure, not mess around (1)
Think and use equipment (1)

13 blank

Microtask: "What points were learnt from this small task?"

Leader must control (3)
Leader must step back and watch (2)
Teamwork (1)
Nothing at all (1)
Listen to leader (1)
Rehearse (1)
Rely on mates (1)
Shutting up (1)
Speed (1)
Give more points in 'O' group (1)

19 blank

Comments

good (2), slightly boring - too long winded (1), instructors
were not very helpful (7), very good, but too much criticism (1)

21 blank

SYNDICATE 1

LD EXERCISE BURNHAM BEECHES

AIM

To give Junior Leaders practise in leadership.

ENABLING OBJECTIVES

At the end of the exercise the junior will have practised:

1) Appreciation and formulation of the plan
2) Briefing his team
3) Controlling his team in a practical leadership situation
4) Debriefing his team

POTENTIAL PITFALLS

These objectives all require a certain amount of knowledge from the juniors i.e. how do I give a briefing/O Gp?

Will the juniors all have this knowledge?

The exercises we wish to do would be the culmunation of a course of leadership development.

SYNDICATE 1

MACRO - TASK

This task follows the Micro (tree climbing exercise). While the Micro is in progress the selected leader is briefed and carries out his recce.

EXERCISE HELICOPTER RESCUE

A helicopter has crashed and the patrol must rescue the blinded crew of two.

PHASE 1 - CROSSING ACIDIC SWAMP

Kit   3 x Barrels
      2 x Planks
      3 x Ropes
      4 x Carabinnas
      2 x Poles
      White Tape

Method   Team has to cross swamp, only barrels may touch ground, and only clean parts may be touched using any kit they like. On far side team moves to river.

PHASE 2 - RIVER CROSSING

Kit   As above.

Method   Team has to direct blinded crew member - Junior Soldier with eyes blindfolded - to assist river crossing using trees and ropes. He must attach rope to tree. (The river is flowing too fast to swim or ford). Once rope is across, both crew members are assisted across. Equipment is then withdrawn and the team has to cross swamp with casualties. All equipment must be recovered.

Helicopter Crash

Bodies

Trees

RIVER   Rope

SWAMP

Route to river
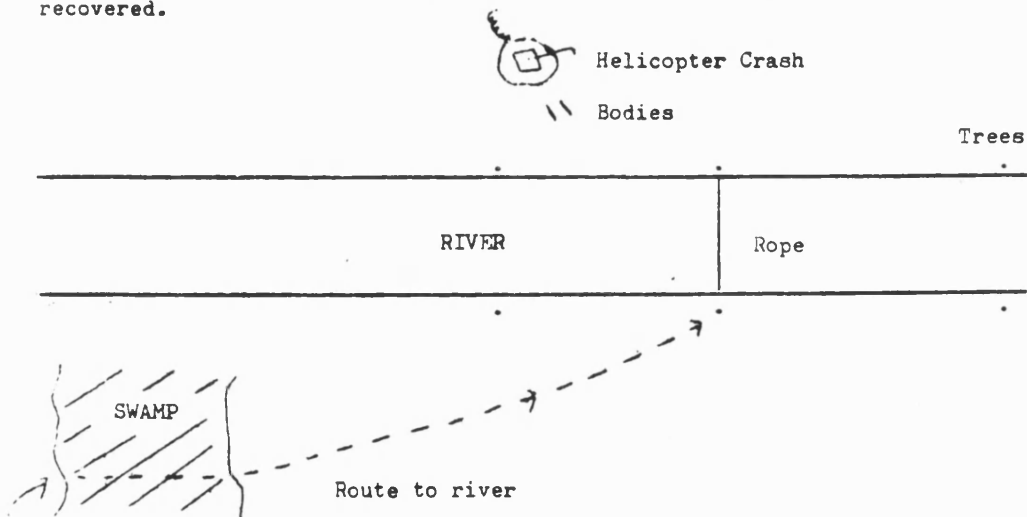
DEBRIEFING: ON COMPLETION

1. <u>Team Leader</u>   He first says what went right and wrong.

2. <u>Team Members</u>   They next discuss leader's performance.

3. <u>DS</u>   Bring out two points - good and bad, and if problem was executed badly give a couple of 'pointers' as a DS solution. Ask juniors for their comments. Finish by restressing the sequence of:

   a. Recce and Plan.
   b. Briefing - possibly with a model.
   c. Rehearsal - not necessary, but well worth doing if uncertain of how to accomplish task.
   d. Control of team - important for leader to position himself correctly to control group. Take care not to do all the work yourself. The leader's task is to supervise his team in the execution of their problem.

<u>MICRO - TASK</u>

1. Description of the Task.

A junior is selected as leader. He is given the aim of having to make a chalk mark as high up a given tree as possible.
He may use any of his resources.
He has a 5 minute time limitation. The time starts from the moment he starts his briefing. Before his briefing, DS hears his plan.

2. Equipment available.

   3 drums
   1 long plank 14'
   1 short plank
   1 long rope 50'
   Various shorter ropes
   4 caribinas
   8 Jnrs
   Chalk

3. Sketch of Area/Obstacle.

N/A A smooth tall tree

4. Teaching points.

DS to watch for and bring out on debrief:

A. Importance of recce and careful planning
B. Importance of brief - does everyone know what he is doing?
C. Did the leader lead the task?
   (1) Does he think so?
   (2) Does group think so?

5. Briefing at start of task to leader.

Jnr _____ . Your aim is to make a chalk mark as high up that tree as possible.
Your resources are _____ (list as above).
Your limitations are: a. You have only 5 minutes from the time you start
                             your briefing.
Remember safety.
Any questions?
You have 5 minutes to recce and plan the task. When you are ready to give your briefing, come and tell me (DS hears plan).

SYNDICATE 1

Name: ....   DS: ....

Time Start: ....   Task No: ....

Time Finish: ....

DEBRIEF PROFORMA

PLAN   Can the leader state

	✓	X
The correct aim		
The value of his recce		
His resources		
His limitations		
At least one safety factor		
His possible options		
His best option		
His sequence of events		
His allocation of individual tasks		

Comments

BRIEF/ORDERS   Does the leader include

	✓	X
Stage management (including model if necessary)		
A description of the ground		
The background situation		
The mission (twice)		
The execution 1) General outline		
2) Individual tasks		
Service support		
Command and signal		
Questions to		
Questions from		
Does he deliver it clearly and confidently		

Comments

COMMAND AND CONTROL   Does the leader show evidence of

✓	X

    Thinking ahead

    Taking up the right position

    Not getting unnecessarily involved

    Setting the pace (awareness of time)

    Flexibility

    Appropriate leadership style

Comments

DEBRIEF   Does the leader

✓	X

    Give a debrief with two or more rated comments

    Allow his group to add to them

Comments

Syndicate 2 - Analysis of Student Debrief - Comments

Aim: "What did the instructors try to teach you?"

        Get other peoples' ideas (4)
        Best way to cross a minefield (3)
        Orders (3)
        Leadership and how to work as a team (3)
        To cross planks (2)
        Use of leader skills (2)
        Rehearse execution phase (1)
        Think round a problem (1)
        Preparation and planning (1)
        To do a task A.S.P. (1)
        Control of team (1)
        Search and return a casualty (1)

        9 blank

Microtask: "What points were learnt from this small task?"

        Don't just use the first idea (3)
        Speed and urgency in crossing obstacles (2)
        Thinking about a task (2)
        Rehearse (1)
        How to build a plank bridge (1)
        Asking team for suggestions (1)
        Work in small groups (1)
        Plan ahead (1)
        How hard it was to do a simple task (1)
        Teamwork (1)
        Searching for a casualty (1)
        Leader not in centre - lost control (1)

        16 blank

Comments

        reduce search area (1), they made you feel uncomfortable (1),
        good criticism (2), explained mistakes, but not positive or
        in great detail (4)

        24 blank

SYNDICATE 2

AIM

To practise leadership skills in the completion of a set task.

ENABLING OBJECTIVES

To practise planning.
To practise the preparation and giving of orders.
To bring out the importance of forethought and
To control the group whilst carrying out the task.

SYNDICATE 2

MICRO - TASK

1. Description of the task.

To construct a path across an area of contaminated ground using the equipment
provided. This consists of a number of fixed 'stepping stones' and 'planks'
of varying lengths which are placed between them, such that only one successful
combination exists.

2. Equipment available.

a. 4 x paper plans
b. 4 x sets of paper 'planks'

3. Sketch.

```
                    O·
            O
                O   O
        O
            O
```
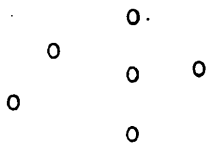
4. Teaching points.

a. Identification and briefing of leader.
b. Leader to brief remainder of section on task.
c. To split section as he sees fit.
d. After 'X' minutes get each sub-groups to explain a solution.
e. Leader to choose which one he prefers and explain and rehearse that
solution.

SYNDICATE 2

MACRO - TASK

1. INTRODUCTION

The task involves stages; briefing to leader, 'O' group, phase 1 search for casualty, phase 2 casvac to base/start point and group debrief.

2. a. BRIEF TO LEADER

   Given in the form of situation and mission.

   b. 'O' GROUP

   Leader briefs group on task.

   c. PHASE 1

   Section deployed to search within given boundaries for casualty.

   d. PHASE 2

   First aid given, ad hoc stretcher made, return to start point via minefield.

   e. GROUP DEBRIEF

   (1) Leader debriefs group.
   (2) Group discussion of leader.
   (3) DS debrief.

3. TASK OUTLINE

Section in a forward defensive position, have to recover a casualty from the previous evenings fighting patrol. They pass through defensive minefield via straight 'stepping stone' pathway, search for casualty and casvac on return to minefield discover 'stepping stones' removed and have to improvise path across.

4. TEACHING POINTS BY STAGES

   a. BRIEF TO LEADER

   (1) Planning and appreciation.
   (2) Recce.
   (3) Rehearsal.

   b. 'O' GROUP

   (1) AFCOP.

   c. PHASE 1

   (1) Control.
   (2) First Aid.

   d. PHASE 2

   (1) Planning and appreciation.
   (2) Recce.
   (3) Rehearsal.
   (4) 'O' Group.

   e. GROUP DEBRIEF

   (1) As per para 2e.

COMMAND TASK ASSESSMENT PROFORMA

NAME: .... GROUP: .... TASK: .... ASSESSOR: ....

1. PREPARATION AND PLANNING

   a. Understanding of task?

   b. Recce?

   c. Quiet thought?

   d. Ideas from team?

   e. Plan

   f. Alternatives

   g. Model

   h. Preparation for 'O' Group

2. ORDERS

   a. Sequence

   b. Clear

      Concise

      Complete

      Timely

   c. Questions from

      Questions to

   d. Rehearsal

3. CONTROL

   a. Location of Leader

   b. Inspire confidence

   c. Inspire motivation

   d. Watch progress and make changes where necessary

   e. Relationship with team

4. DEBRIEF

   a. Leaders Debrief

   b. Squad Debrief

   c. DS Debrief

NB   Mark as follows

     + = good

     - = bad

     0 = average

Syndicate 3 - Analysis of Student Debrief - Comments

Aim: "What did the instructor try to teach you?"

Clear orders (6)
Cross a lake (6)
Make a map (3)
Make a raft (2)
Leadership (2)
Think first (2)
Control a section (1)
Trust leader (1)
Use your training (1)
Arrange an ambush (1)
Nothing (2)

5 blank

Microtask: "What points were learnt from this small task?"

How to give orders (4)
Teamwork (2)
Check everything (2)
Use of models (1)
Changing leadership (1)
Talk clearly (1)
Make sure everyone knows what they are doing (1)
Clear orders (1)

19 blank

Comments

quite good DS debrief (3), more planning needed (1), he was
quite good - though I didn't know what he was on about (1)

27 blank

SYNDICATE 3

AIM

To practise Junior Leaders in giving clear concise orders in a simple operational situation.

ENABLING OBJECTIVES

1. To make a model of a recced objective.

2. To use the model in briefing for an operation against that objective.

3. To use the headings for orders.

TIMINGS

15 mins - Briefing of Leader and Group - MICRO TASK

45 mins - MACRO TASK

15 mins - Debrief

SYNDICATE 3

MICRO/MACRO - MODEL/SKETCH

1. Make a model/sketch with whatever to hand e.g. twigs, string, paper.

2. Show NORTH (pencil/twig pointing).

3. Indicate the scale (how far, how big).

4. Only essential features should appear in your model (e.g. pond, bridge, mountain, cover).

5. Orientate group to the model - move THEM.

6. Point when explaining.

ORDERS

1. Use all the headings.

2. Speak clearly.

3. Task individuals by speaking and looking at them.

4. Allow questions ("Have you any ?")

SYNDICATE 3

MICRO - TASK

LEADER

1. Briefed reference Orders at most northerly pond.
2. Given headings for Orders.
3. Briefed reference situation.
4. Briefs group at second location with a model using the headings.

GROUP

1. At second location - near southerly pond - unload kit (1st group).
2. Briefed reference Orders.

SITUATION FOR LEADER

GROUND

Pond - left
Bridge - right
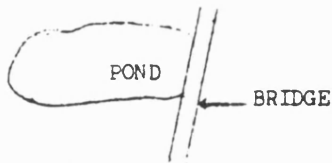
SITUATION

En Forces

Enemy are about to cross the bridge with heavy armour.
In divisional strength.
Recently won a battle and will exploit his advantage.
Its a characteristic of the enemy to advance once a break has been made in a defence.

Fr Forces

You are the only friendly forces in the area.
You have one 4 ton truck with high explosives.

MISSION

Your mission is to destroy the bridge.

EXECUTION

As soon as possible.

SERVICE SUPPORT

You have none.

HQ is Greenham Common, High Wycombe.
Radio silence is to be maintained.

SYNDICATE 3

MACRO - TASK

1. The task is to cross a water obstacle using equipment provided and recover a pre-positioned delicate object.

2. The aim is to teach the students to issue clear and complete orders to carry out the task.

3. Attached are:

    a. DS Briefing Script. This will be used when briefing the patrol commander. The patrol commander will be separated from his men, taken to the obstacle and briefed there. The rest of the patrol will not approach the obstacle.

    b. Headings for Orders. To be given to the patrol commander as an aide-memoire to be used when giving his briefing.

4. The patrol commander will be encouraged to use a model or a sketch plan to supplement his briefing. He will not be allowed to bring his patrol in sight of the obstacle until they are ready to carry out the actual crossing.

SYNDICATE 3

MACRO - TASK

1. **GROUND**

   FOREGROUND   Cover to pond.

   MID GROUND   Pond and bridge (to right) heavily mined - NOT to be used.

   FAR GROUND   Path - follow path South to a large tree.

2. **SITUATION**

   ENEMY FORCES   The enemy are in company strenght.
                        They occasionally patrol the area you are working in.
                        The bridge has been heavily mined.

   FRIENDLY FORCES   Intelligence has left a very delicate object in a dead
                           letter box at the large tree.

3. **MISSION**

To recover the delicate object intact (repeat as necessary).

4. **EXECUTION**

You MUST complete the task in 30 minutes from the end of this briefing.

5. **SERVICE AND SUPPORT**

HQ is Greenham Common, High Wycombe.

6. **COMMAND AND SIGNAL**

Radio silence is to be maintained throughout.

EQUIPMENT

4 barrels
4 14ft planks
6 eggs
1 ammo box
  rope
  cutting tool for rope

SYNDICATE 3 (MAF)
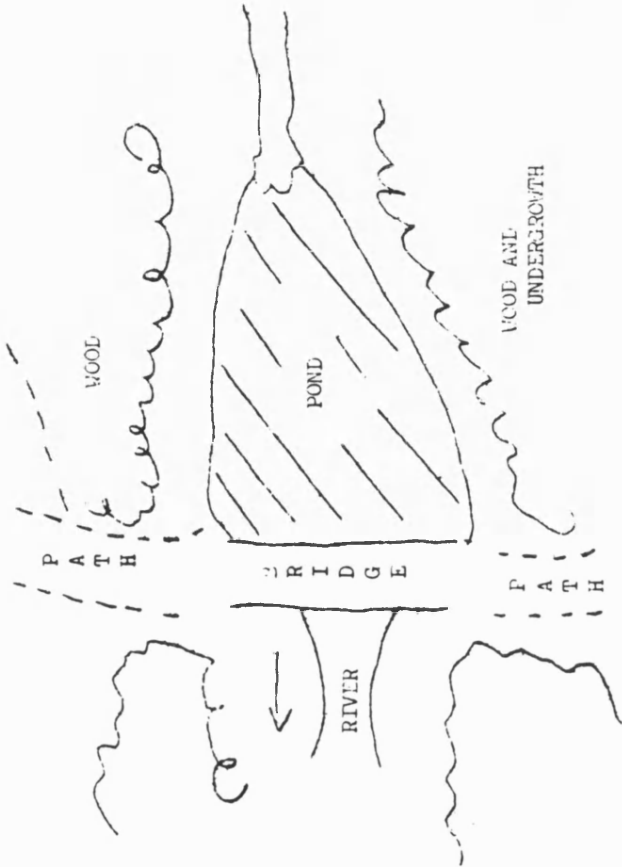
NOT TO SCALE

SYNDICATE 3

DEBRIEF PROFORMA

AIM: ONLY TO ASSESS THE BRIEFING (which is our aim).

1. Did he use a model?

   Yes

   No

2. Was the group orientated to the model?

   Yes

   No

3. Was the scale explained?

   Yes

   No

4. Did the model lack an essential feature?

   Yes

   No

5. The following headings were used:

   Ground

   Situation

   Mission

   Execution

   Service Support

   Command and Signals

6. Were the orders delivered clearly (audibly)?

   Yes

   No

7. Were tasks given unambiguously (without doubt) to individuals?

   Yes

   No

   Sometimes

Syndicate 4 - Analysis of Student Debrief - Comments

Aim: "What did the instructors try to teach you?"

            Teamwork (4)
            To cross an area without touching ground (4)
            Use of an alternative plan (3)
            Work under pressure (3)
            Plan ahead (2)
            Task may alter (2)

            14 blank

Microtask: "What points were learnt from this small task?"

            Think of alternatives (10)
            Use reserve plan (5)
            Teamwork (4)
            That we could cross area (1)
            Cross area without central support (2)
            Clear orders (1)

            9 blank

Comments

            too regimental teaching method (4), instructors didn't explain
            a lot to us (2), not relaxed but not too strict (2), needed
            more time (1)

            23 blank

SYNDICATE 4

AIM

To involve a chosen leader in adapting to a changing situation in the execution of a given task.

ENABLING OBJECTIVES

1. To plan the task.
2. To present the task to the group for execution.
3. To amend the plan in the light of a changed circumstance.

CANDIDATE 4

MICRO - TASK

AIM

1. To involve a chosen leader in adapting to a changing situation in the execution of a given task.

ENABLING OBJECTIVES

2. The recognition by the leader of the point where the task changes and the need arises to reorganise his plan accordingly.

3. The leader demonstrates:

    a. Planning
    b. Organisation
    c. Delegation
    d. Control - leadership style

EQUIPMENT

4. a. 3 x oil drums
    b. 2 x 14 ft planks (or approx size)

SITUATION

5. The group are moving across enemy controlled country carrying vital intelligence for the unit. A small river bars the way which has been blown leaving only the three main pillars. The river must be crossed. The gaps are too big to jump and the river is too highly contaminated to swim or cross in anyway other than via the remains of the bridge. The only help available to get the group across 2 x 14 ft planks. An enemy patrol is close behind.

TASK (MISSION)

6. To move the whole group over the river together with the two planks.

ORGANISATION OF TASK

7. DS brief the group on the situation and task.

8. Group take notes.

9. Leader appointed and given 10 mins to:

    a. Consider the task.
    b. Prepare a plan.
    c. Prepare orders for his 'O' Group.

10. Remainder consider task having been warned that the leader could become a casualty.

11. Leader presents his plan and orders to DS for comment as necessary.

SYNDICATE 4

AIM

To involve a chosen leader in adapting to a changing situation in the execution of a given task.

ENABLING OBJECTIVES

1. To plan the task.
2. To present the task to the group for execution.
3. To amend the plan in the light of a changed circumstance.

12. Leader gives his 'O' group.

13. Task begun.

14. Centre pillar collapses.

15. Leader re-assesses and continues task.

16. On completion DS hold group de-brief - performance assessment.

TIMINGS (MAXIMUM)

17. Group briefing 5 mins.   )
)
18. Leader preparation for task 10 mins.   ) Total time for
) Micro task 35 mins maximum
19. Task 15 mins.   )
)
20. Debrief etc 5 mins.   )

SYNDICATE 4

MACRO - TASK

GROUND

You are in enemy held territory alongside a highly contaminated river. The other side of the river is held by the resistence.

SITUATION

You are confronted by the remains of a bridge over the river. All that is left are three bridge supports. Three members of the resistance party are on the other bank.

MISSION

To cross the contaminated river, taking all the equipment used, as quickly as possible.

EXECUTION

General Outline

Party divided into two groups.

a. Group 1 (with leader):- to cross the bridge via the supports taking with you:

                        (i)   the two planks
                        (ii)   the thick rope
                        (iii) any other equipment used

b. Group 2 (3 resistance workers):- to aid the crossing from the support on the far bank. This party comes under the command of the leader for the crossing.

COURSES OPEN

More than one method for crossing available using combinations of planks and rope. However enemy action may cause equipment loss during the crossing. This could require an alternative plan.

CONSTRAINTS

You may use the top of the central support and any part of the two other supports that are outside the contaminated (taped) areas. The contamination within the taped areas extends upwards for approximately 18".

TIMINGS

1. Team leader preparation - 10 mins.
2. Team leader 'O' Group - 5 mins.
3. Task completion - 30 mins.

NOTES

1. Team leaders/resistance workers will be selected after the DS briefing.
2. Each team will be timed for task completion.

PLAN OF THE GROUND (SYNDICATE - 4)

Area 1 = 12FF Long
Area 2 = 15A Regt

North

NORTH BANK

SOUTH BANK
(enemy held terrain)

River 30ft

CONTAMINATED

Bridge Step 3
R B Group 3 (Reserve flight)

Bridge Step 2 10ft

Bridge Step 1 3ft

START LINE

15ft

Group A
(Smoke)

R O A D
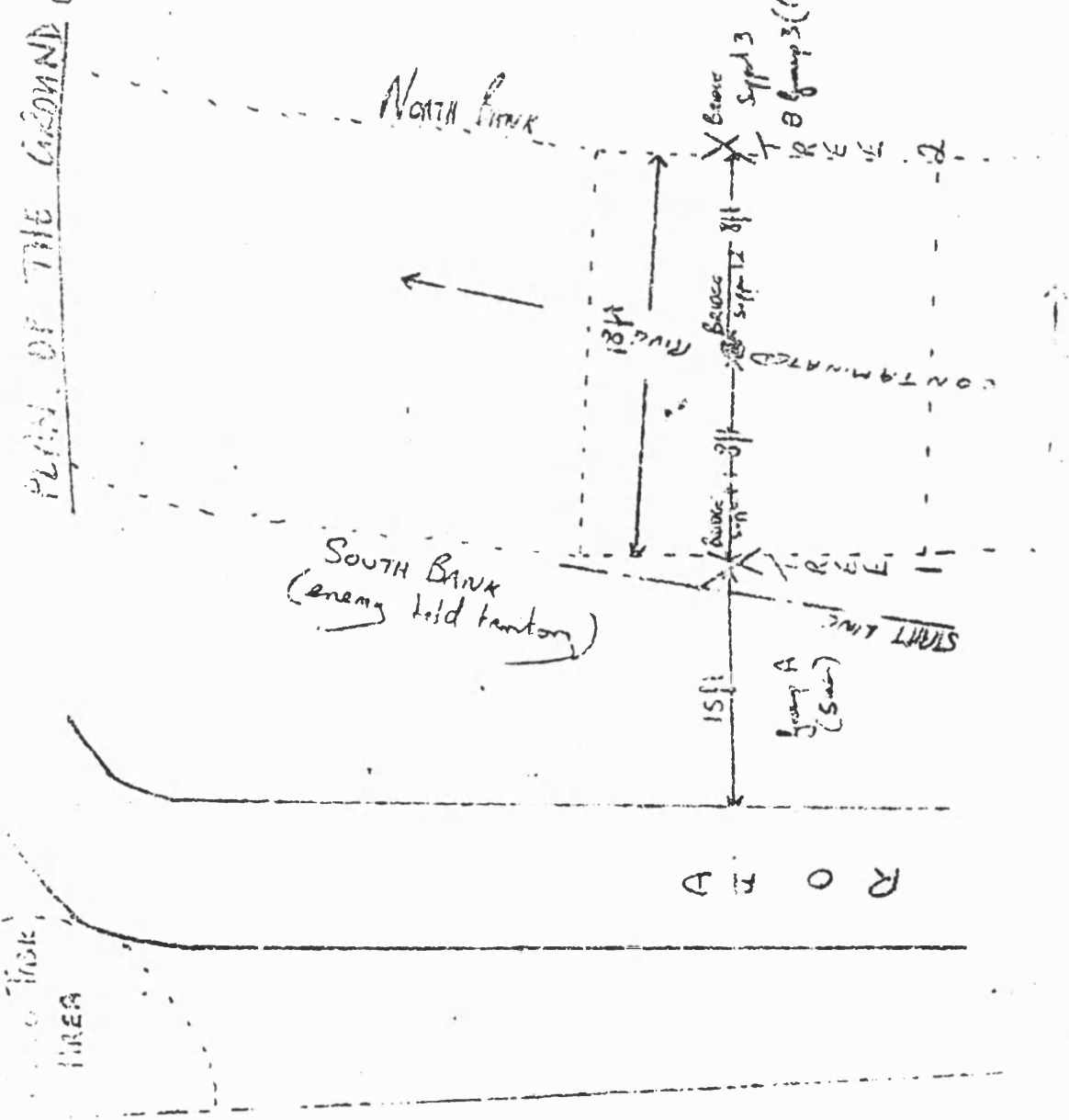
Topic to lecture argument 4,

A SYSTEM FOR GETTING RESULTS AND SOLVING PROBLEMS

Result-Getting Cycle .

4 ◯ 1
3 ⟶ 2
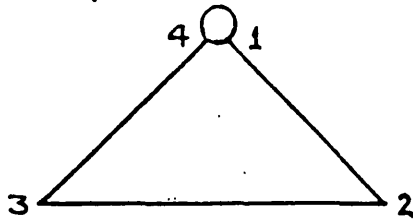
Stages	Responses
(1) Given a task or objective and not ready.	Plans and preparations.
(2) Given a task or objective and ready to act.	Initiation and action.
(3) In action and in sight of completion time.	Completion.
(4) At the end.	Review.

Solution-finding Cycle

3
2 ◇ 4
1 ◯ 5
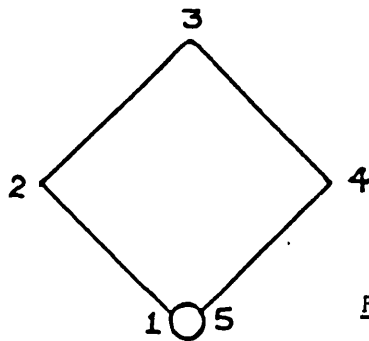
Stages	Responses
(1) Having detected or received a problem.	Formulation = Identification and Definition.
(2) Having defined a problem and requiring more understanding.	Interpretation = Analysis and modelling.
(3) Having reached understanding about a problem and needing a solution.	Construction or courses of action = Strategic Thinking, Creative Thinking, Building a 2-pronged system.
(4) Having one or some adequate courses of action (solutions) and needing to choose.	Decision-making and quick decision, commitment.
(5) Having decided on a course of action.	Implementation = Result-getting cycle.

Educational objectives *(these are the levels of learning)*

Given a real situation or a description of a situation:-

(1) Name which cycle (Result-getting or Solution-finding) it belongs to.

(2) Name which stage it belongs to in the cycle.

(3) Name the stage to go to next (back or forward).

(4) Name the correct method (having gone back if necessary and repeated (3)).

(5) Describe the correct method.

(6) Apply the correct method correctly.

(7) Get good results.

KFJ NOV 1983

COORDINATING SKILLS PROGRAMME: NOV/DEC 1986.

Military Studies Wing, JLR RCT/RAOC.

Day/Ser.	Time	Action	Issue/Explain

1/1	0900-0950	Induction:	Macro FB PF
		System,	
		Expectations,	
		Success.	
		Administration:	
		Instructor collects Micro kit.	
1/2	0950-1230	Obj: 1-3	AFCOP format
		Mit 1 (The Message)	
		Mit 3 (3 Candles)	
1/3	1400-1700	Obj: 4	
		Mit 4* (2 ropes in quadrangle).	
		Obj: 5	TT/PG format
		Mit 5 (Cup of tea)	

* "Models" video will be available in the cinema, to underline your own lessons learnt after Mit 4.

2/1	0900-1130	Mit 6 (Jigsaw Sprint**)	
		Obj: 6/7	TP format (GSMESC)
2/2	1130-1500	Mit 10*** (Buildex)	
		Obj: 8	
2/3	1500-1630	Mit 9 (Cone-Dance)	
2/4	1630-1700	Mit 11 (Cobex - can of beans)	

**Ensure the blank sides of the jigsaws are clear of all marks and codes, when returned.

***Mit 9 can come before Mit 10.

3/1   0900-1100   Mit 11 (continued)

                         Students complete Microtask feedback.
                         Instructors check and return Microtask
equipment to room 7.

3/2   1100-1230   Exercise Briefings:

                              Directing Staff/Drivers: room 7.
                              Students: Cinema.

                         Exercise stores/admin. issued.

4/1   0800   Parade for move to Forest of Dean, main car-
park.

4/2   0930   Macrotask phase begins.

5/8   1800   Teams assemble, final debrief exercise
learning points, improvements, admin.

                         Issue Macrotask feedback to troop staff.

5/9   2000   Arrive back at Colerne, de-kit.

PREPARED TALK IN THE FIELD DEBRIEF (VN82CS)

Name .... Sqn .... Subject .... Date ....

Time Start .... Time Finish ....

I Organisation	Yes	II The Talk	Yes	Brief Outline of Talk

I Organisation

(Look at his kit and materials before he begins)

a.   Did he make notes?

b.   Were they prepared properly?

   (1) Large subject headings

   (2) Coloured pens

   (3) Legible

   (4) Was kit organised and covered from audience?

c.   Has he got:

   (1) An introduction – saying why the talk is useful/important

   (2) A middle – most information – in stages

   (3) A conclusion

II The Talk

a.   Could everyone see both him and the kit?

b.   Did he look up from his notes enough?

c.   Did he speak clearly?

d.   Was it logical?

e.   Did he improve as the talk went on?

f.   Did he ask them questions to check their understanding?

g.   Had he rehearsed it?

h.   Did he run over time?

Brief Outline of Talk

PS Comments on Performance (good and bad)

Annex E.1

COMMAND TASK DEBRIEF (VN82CT)

Name .... Sqn .... Task .... Date ....

Yes

I **The task**

(1) Did he detail
the factors to the
group?

(2) Did he state
the crul/aim?

(3) Did he produce
his own plan?
        or
(4) Use a group
plan

II **Control**

(1) Did he get too
physically
involved?

(2) Did he listen
to suggestions?

(3) Did he act upon
suggestions?

(4) Did he worry
about time?

(5) Did he motivate
(shout)?

(6) Did he use
manpower
intelligently?
(strongest, most
agile members)

III **Performance**

(1) Was anyone left
out?

(2) Did his plan
hold up?

(3) Did he become
just another member
of the group?

(4) Did his plan
change?

IV **Debrief**

(1) Did the team
have any comments?

(2) Did the leader
learn anything?

Yes

Brief Outline of Leader's Orders

DS Comment on Performance (good and bad)

LEADERSHIP PERFORMANCE DEBRIEF (VN82CT)

Name .... Sqn .... Task .... Date ....

Time Start ....

Time Finish ....

I The Task

    (a) Has an AFCOP been completed?

    (b) Has a 2IC/3IC been appointed?

    (c) Has a model/map/sketch been prepared of objective?

    (d) Has it been explained?

    (e) Have the headings been used properly?

GROUND
SITUATION
MISSION (TWICE)
EXECUTION
    (1) GENERAL OUTLINE
    (2) DETAILED TASKS
    SERVICE SUPPORT
    COMMAND AND SIGNALS

    (f) Were the team asked any questions?

    (g) Did the team have any questions?

    (h) Did the leader remain in control?

    (i) Has the team rehearsed?

Yes

II Action

    (a) Control

        (1) Did leader locate himself centrally

        (2) Did everyone know where he was?

        (3) Did he get physically involved in the task, instead of controlling the group?

        (4) If a new factor came into the situation did he respond?

        (5) Did he worry about TIME?

    (b) Performance

        (1) Did it go as expected?

        (2) Was the plan any good?

    (c) Debrief

        (1) Did the team have any comments?

        (2) Did the leader learn anything

Yes

Brief Outline of Leader's Orders

DS Comments on Performance (good and bad)

TE.M LE.DER - B.SIC

INDIVIDUAL STUDENT EXERCISE REPORT

GR.DE A/B/C   EX D.TE _____   REPORTING PS _____

N.ME _____   SQN _____

(1) ORG.NIS.TION	(11) CCMM.NDS	(111) WORK WITHIN THE TE.M

NOTES (a) 1-111 (above), lcosely based upon TL objectives 8.C-8.2

(b) Report extracted by PS from Leadership Performance Debrief

(c) Grades: C - Student received instruction in objectives 1-9

B - As C, plus successful 'C' group

A - As B, plus demonstrated ability to employ TL techniques successfully

TEAM LEADER FEEDBACK PROFORMA (VW83TL) - BASIC LEVEL

Name .... Sqn 30/57/90   Date ....   Task ....

INSTRUCTION TO DS - CIRCLE NUMBER
CODE IF ANSWER IS NO TO QUESTION.
IF YES, LEAVE UNMARKED.

EXAMPLE   2.3

I.   PRE-'O' GROUP DS CHECKLIST

Has the TL -

1.1 Completed a AFCOP on the TASK?

1.2 Made a model?

1.3 Produced a GRID PLAN in Detailed Tasks (4.2)?

1.4 Covered all 6 GSMESC headings?

If all OK, let TL begin .....

II.   TL 'O' GROUP

2.1 Numbered off the team?

2.2 Explained the model?

2.3 Methodically used

    GROUND
    SITUATION
    MISSION
    EXECUTION
        4.1 GENERAL OUTLINE
        4.2 DETAILED TASKS (GRID PLAN)
    SERVICE SUPPORT
    COMMAND AND SIGNALS

2.4 Confirmed, by testing individuals knowledge?

2.5 Rehearsed the task
     - on the model
     - on the ground

2.6 Did he ask the team for questions?

2.7 Remain in control of the 'O' group?

III. ACTION - CONTROL

3.1 Did TL locate himself centrally?

3.2 Did everyone know where he was?

3.3 Did he tend to get physically involved in
     the task, instead of controlling the team?

3.4 Did he respond to new factors in the situation?

3.5 Did he lose control?

3.6 Did 2/3IC support him?

3.7 Did he consider TIME?

IV.   DEBRIEF

4.1 TL - is he conscious of his failings?
     (if any)?

4.2 TEAM - did they put TL right on his
     mistakes?

4.3 TEAM - did they see his mistakes and
     mention them?

4.4 Did the TL learn anything?

4.5 As DS, list the simple points learnt
     by the TL and Team on the Task (use
     back, if necessary).

TEAM LEADER - BASIC   EX DATES ....   REPORTING DS ....

INDIVIDUAL STUDENT EXERCISE REPORT

PERFORMANCE MATRIX GRADE

A - 1	B - 1	C - 1	D - 1	(1) ORGANISATION	(11) COMMAND
A - 2	B - 2	C - 2	D - 2		
A - 3	B - 3	C - 3	D - 3	(111) WORK WITHIN TEAM	

Notes: (a) I,II based on FEEDBACK PROFORMA, and 'Sources of a Leaders Power' - TL Handbook.
        (b) In I, II, III - one-word comments are not enough.
        (c) Number system in performance matrix grade (after A, B, C) indicates positive contribution as team member   1 - good, 2 - fair, 3 - weak.
        (d) Grades: D - Student received instruction in Exercise TL objectives, and attended EX.   C - As D, plus successful 'O' group.
              B - As C, plus demonstrated basic control of group to achieve Task.
              A - As B, plus demonstrated ability to a) forsee problems   b) team-build/motivate.

Annex E.5

CORDSKI FEEDBACK PROFORMA - BASIC LEVEL MACROTASKS

Directing Staff ....

Name .... Last 3 ...., Date .... Task .... Troop .... Sqn/Coy: 30/57/88/90

I. **PRE - 'O' GROUP - DS CHECKLIST**
Has the TL -
1.1 Completed a AFCOP on the TASK?
1.2 At least 2 x CO in the AFCOP?
1.3 Made a model?
1.4 Produced a PLAN GRID in DETAILED TASKS?
1.5 Covered all 6 x GSMESC headings?
If all OK, let TL begin ....
II. 0-Group
2.1 Numbered off the team?
2.2 Explained the model?
    Methodically used
2.3 G - Ground
2.4 S - Situation
2.5 M - Mission
2.6 E - Execution
2.7 General Outline
2.8 Detailed Tasks (Plan Grid)
2.9 SS - Service Support
2.10 CS - Command and Signals

INDIVIDUAL STUDENT EXERCISE REPORT
PERFORMANCE MATRIXGRADE

A - 1	B - 1	C - 1	D - 1
A - 2	B - 2	C - 2	D - 2
A - 3	B - 3	C - 3	D - 3
A - 4	B - 4	C - 4	D - 4

NB: Stick to the grade
    definition - don't
    interprete.

1ST/2ND Task (if 2nd attach previous, as well)
2.11 Confirmed, testing individuals knowledge?
2.12 Rehearsed the task
     - on the model
     - on the ground
2.13 Ask the team for questions?
2.14 Remain in control of the 'O' Group?
III. **ACTION - CONTROL**
3.1 Locate self centrally?
3.2 Everyone know where Leader was?
3.3 Kept physically detached from the task
    action (ie told team what to do, didn't
    do it himself)
3.4 Respond to new factors in the situation?
3.5 Lose control?
3.6 2/3IC supported leader?
3.7 Considered TIME?

IV. DEBRIEF BY DS - USE THESE QUESTIONS TO HELP
THE LEADER AND THE TEAM TO MAKE THE POINTS.
DON'T DO ALL THE TALKING.
- Team Leader
4.1 To what extent was the task successful?
___% (0%, 10%, 60%, 100%)
4.2 Did anything go wrong? (run through the
task?)
4.3 IF you were to do this task again, what
changes would you make?
- Team
4.4 Did the 'O' Gp prepare you adequately for
the task?
    - was the model accurate?
    - how good was the PG?
4.5 Did you try to help the leader?
- Finally, Team Leader
4.6 What have you learnt from this task?
- Finally, Team
4.7 What you learnt?

(i) ORGANISATION	(ii) COMMAND (includes % estimate of task success)
(iii) WORK WITHIN TEAM (when not a leader)	(iv) LESSONS LEARNT

Notes: (a) I, II based on FEEDBACK PROFORMA and 'Sources of a Leaders Power' - TOGPSP/CORDSKI Handbook
(b) In i, ii, iii, iv, one-word comments are not enough
(c) Number system in performance matrix grade (after A, B, C) indicates positive contribution as team member 1 - good, 2 - fair, 3 - weak,
    4 - negligible
(d) Grades: D - Student received instruction in Exercise   objectives, and attended EX. C - As D, plus successful 0-Group
            B - As C, plus demonstrated basic control of group to achieve Task
            A - As B, plus demonstrated ability to a) foresee problems   b) team-build/motivate

THE ENHANCED 12-BORE BLANK PYROTECHNIC DEVICE

1.   The Aim of the Device

To provide a re-usable pyrotechnic device with the following characteristi.

a.   Cheap to build and use

b.   Produces a sharp, loud explosion

c.   Predictable

d.   Constructed from unit resources and accessible civilian hardware

e.   Simple to use, with basic safety considerations

f.   Unlikely to pose a fire-risk in a dry woodland training area

g.   Can function in several ways - as an AP command - controlled or trip-activated mine, or as an explosive charge lowered down a rigid cable to a target and fired

2.   How the Device Functions

We discovered through experiment, that when a 12-bore blank is fired into the neck of a plastic lemonade bottle (1½ or 2 litres), that the original explosion is magnified due to the bottle acting as a pressure chamber which bursts under the intense heat and gas generated.

We also discovered that we could make the bang even louder by ensuring:

a.   An airtight connection between cartridge and bottle neck, using prepared strips of masking tape, and

b.   that the bottle was securely mounted onto the cartridge

It is technically possible to enhance the explosion yet further by putting Butane gas into the plastic bottle. We can not recommend this as practical.

3. Safety Considerations

We recommend the wearing of safety goggles in the close proximity of the device once the safety pin has been removed.

The plastic bottles tend to melt under the intense heat generated by the gas, however under sub-zero temperatures the plastic acts like glass so that instead of melting, the bottle will tend to disintegrate into plastic splinters.

Under normal temperatures we recommend safety zones of 5 feet, in extreme cold a safety zone of at least 10 feet.

4. Materials Required: See diagram/pictures

01 Chassis: Wooden with 2 blocks - one for mounting trip device
                                     - one for mounting a pulley wheel
            4 holes for mounting on trip stakes
            one slit for velcro nylon strap to secure plastic bottles

02 Metal L-shaped bracket: with 12-14mm wide slit to make it adjustable
                              Also an additional small L-shaped bracket
                              at bend for mounting a second pulley wheel

03 Trip Device: (Alarm Mine £4.31 Helston Gunsmiths, The Clies, Meneage
                   Street, Helston, Cornwall TR13 8RF)

04 2 pulley wheels: Builders Merchants (£1.90 each)

05 2 long bolts, one fixed by a normal nut, the other by a wing-nut
    (to adjust and lock the L-shaped bracket: 02)

06 Safety pin (kilt pin))
) both secured by chains to chassis: 01
07 Sear plate   )

08 Velcro nylon webbing strap

09 Paracord/nylon cord/trip wire to fire device from a distance - command
    string

10 A pair of antimist safety goggles - for person removing safety pin
    from the firing pin (approx £2.00, most Builders Merchants)

<u>To fire the device</u>:

11   12-bore blank cartridge (most Gunsmiths - 17p each)

12   Strips of black masking tape; 12 cms long. 1.5 cms wide to secure
      the blank in position and make an airtight connection in the bottle'
      neck

13   1½-2 litre plastic lemonade bottle

5.   <u>Preparing and Firing the Device</u>

5.01 Ensure that you have: 12-bore blank (dry), masking tape, command
      string, 2 x pickets/trip stakes, safety goggles around neck.

5.02 Decide how you want to fire the device - say AP ground mode.

5.03 Pull the FP (Firing Pin) back on the mounted trip device until the
      drilled hole in the FP is visible. Insert and secure the SP (Safety
      Pin). Loosen bracket.

5.04 Insert the blank, wrap a strip of prepared masking tape around the
      cartridge.

5.05 Pull the FP further back until the SEAR GROOVE all around the FP
      is revealed, insert the SEAR PLATE
      If you intend to fire the device at any angle other than at 90° to
      the angle of pull, insert a tooth on the sear plate and <u>not</u> one of
      the gaps.

5.06 Fit the bottle into the prepared blank cartridge, then strap it onto
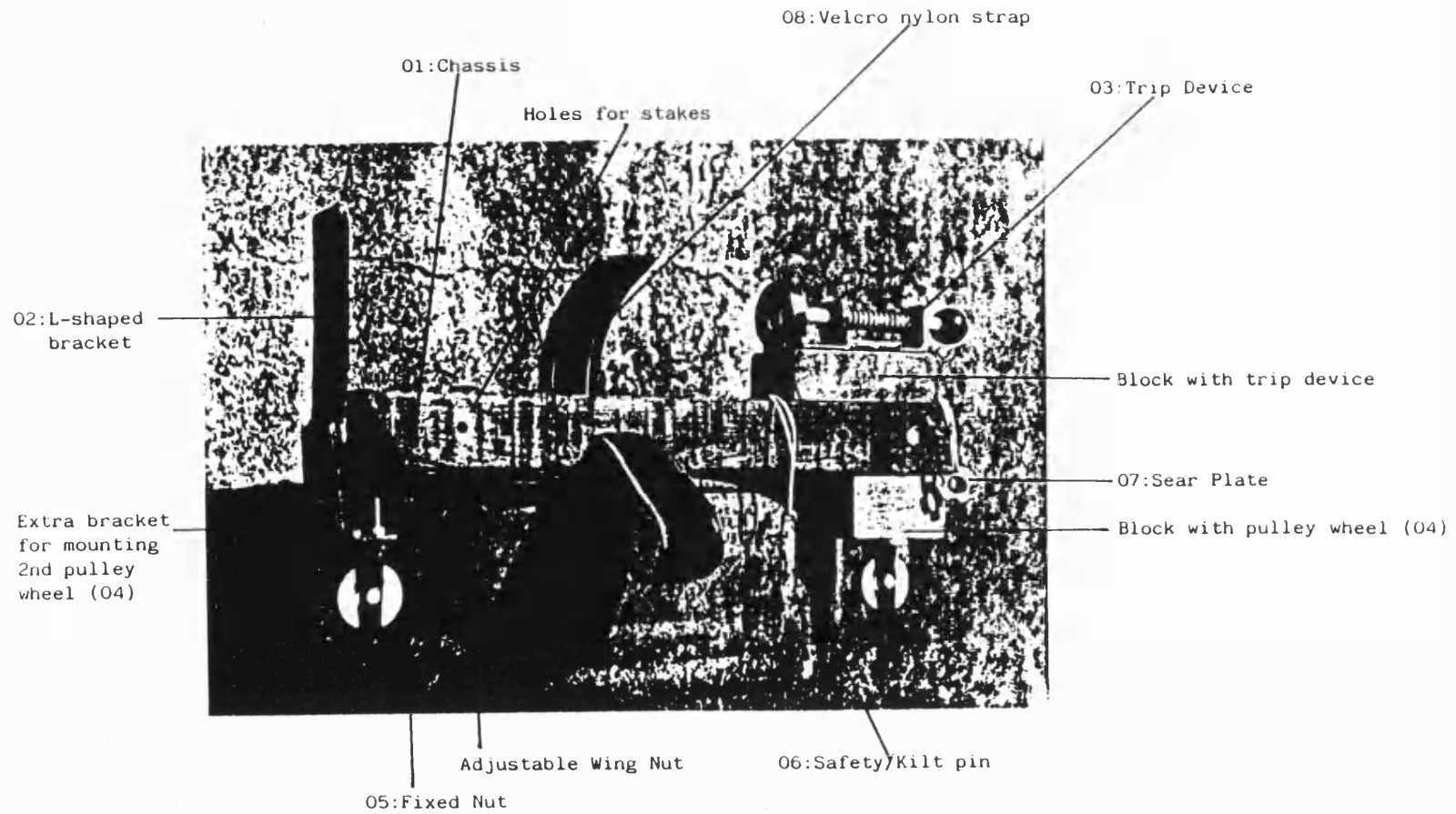   the chassis, firmly locking the L-shaped bracket.

5.07 Fit the pickets onto the drilled holes in the chassis, then press
the chassis into the ground.

5.08 Put on the safety goggles.

5.09 Check that your command string is not tangled and reaches your
chosen firing point.

5.10 Remove Safety Pin from Firing Pin.

5.11 Retreat to firing point. If area around device is clear of soldiers
pull cable.

5.12 Bang!

A 7-minute video is available demonstrating this sequence. Please send
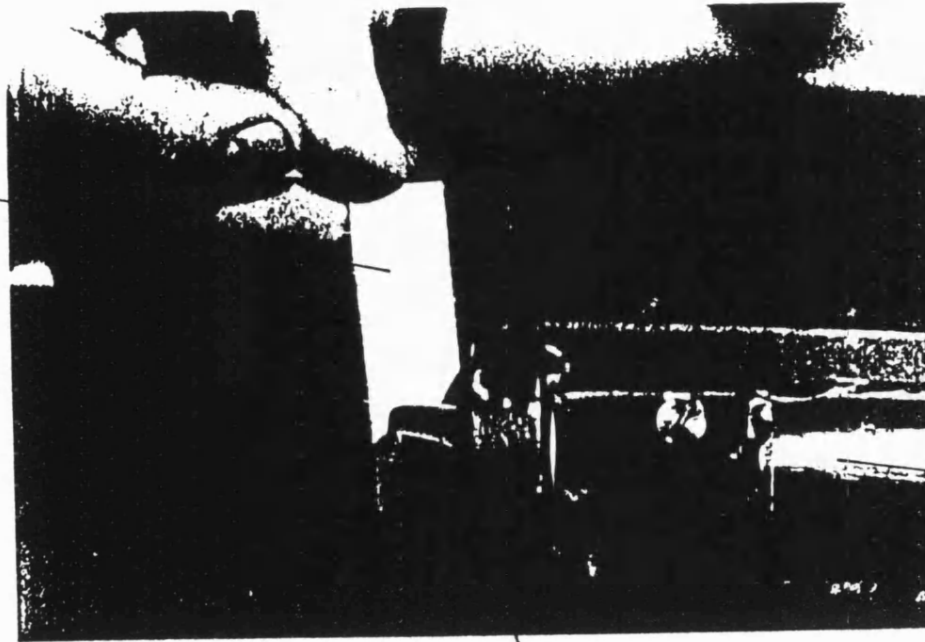your tape and we will make a copy for your unit.

V NEWMAN Burnham Lecturer 1
Sgt P STONIER RCT
Cordski Cell
MSW
JLR RCT
Azimghur Barracks
Colerne
Wilts SN14 8QY

10 October 1985

08:Velcro nylon strap

01:Chassis

03:Trip Device

Holes for stakes

02:L-shaped
bracket

Block with trip device

07:Sear Plate

Extra bracket
for mounting
2nd pulley
wheel (04)

Block with pulley wheel (04)

Adjustable Wing Nut

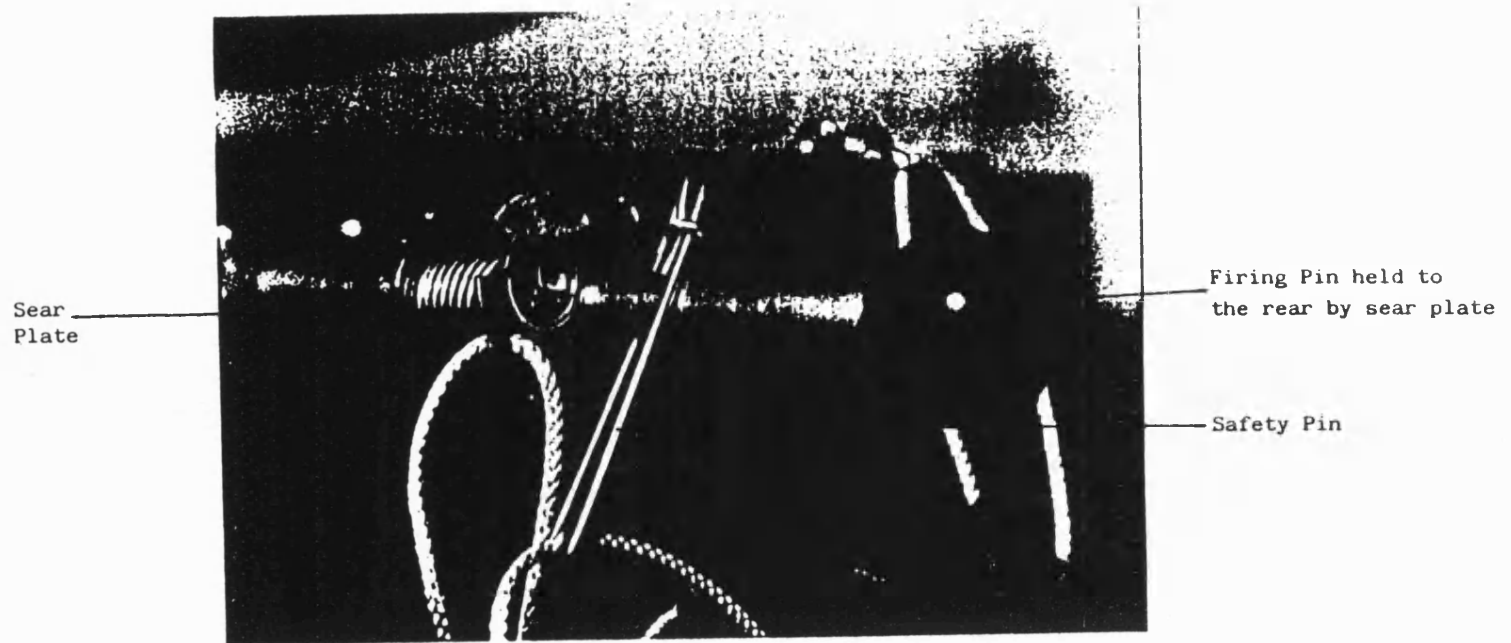06:Safety/Kilt pin

05:Fixed Nut

PREPARING AND FIRING THE DEVICE 5.04

Strip of
Masking
Tape
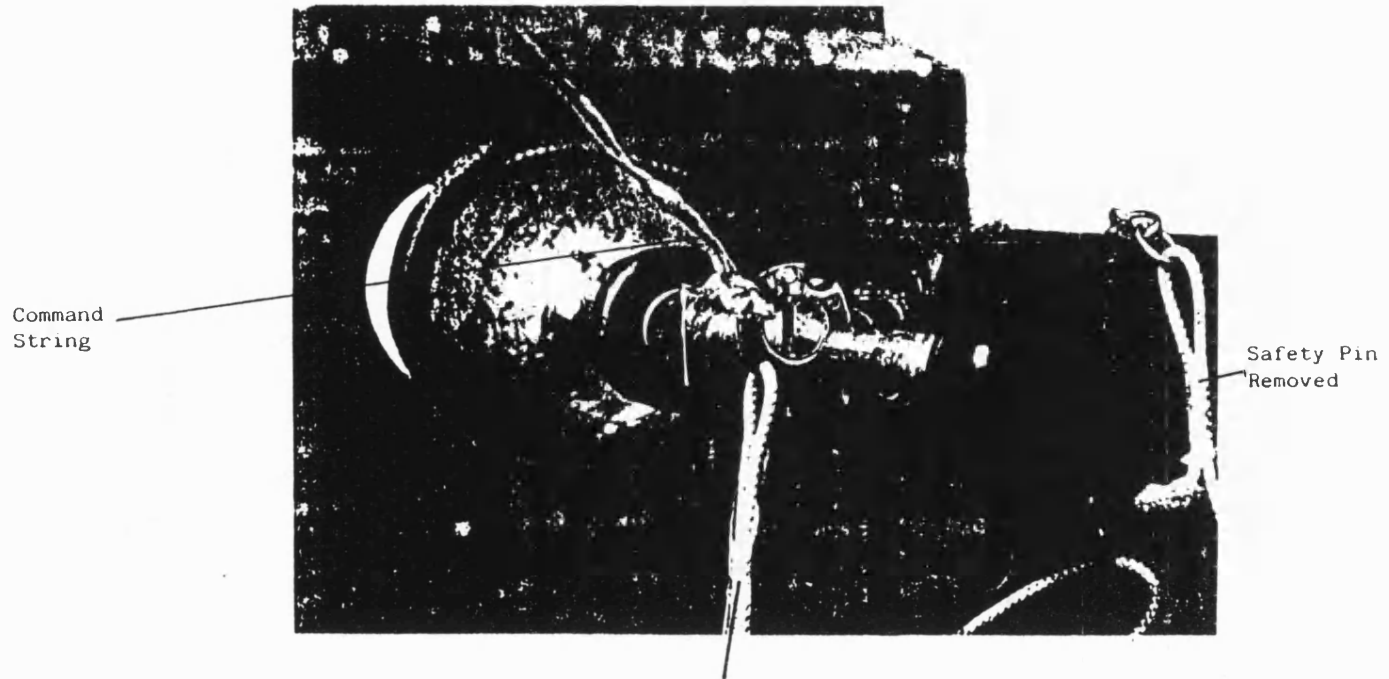
Firing Pin pulled
and held to the rear
by safety pin
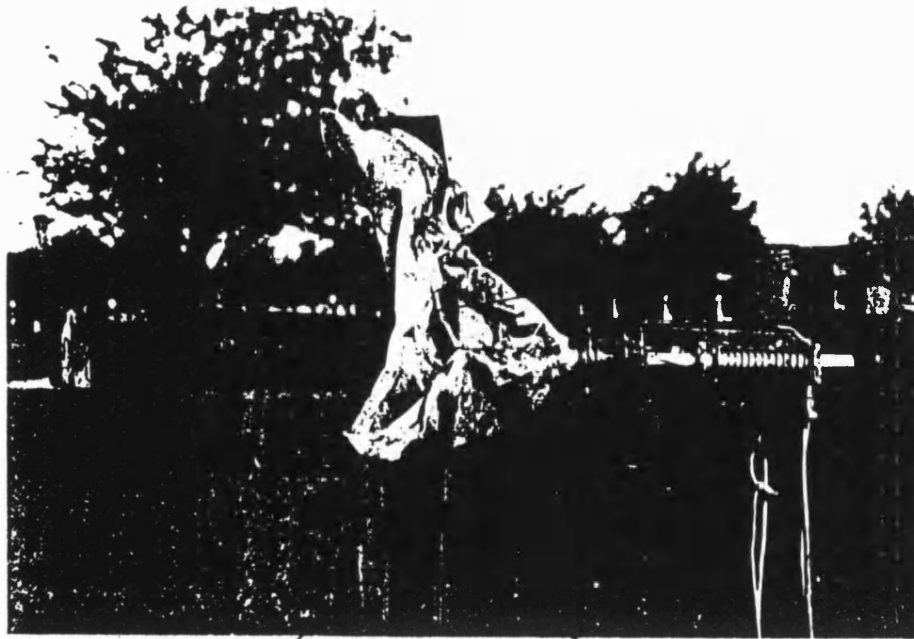
12 Bore Blank

SEAR PLATE AND SAFETY PIN ENGAGED 5.05

Sear
Plate

Firing Pin held to
the rear by sear plate

Safety Pin

Command
String

Safety Pin
Removed

Firing pin held to the
rear by sear plate only

Annex F.8

THE DEVICE AFTER FIRING 5.12

2 litre container
exploded

Firing Pin forward
striking 12 bore
blank

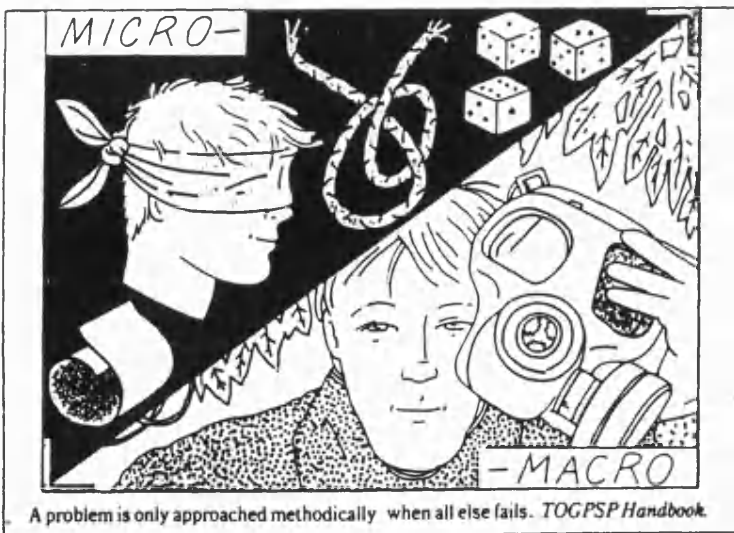Sear plate
disengaged

Fired 12 bore blank
inside neck of bottle

Velcro staps
forced open

There are games and games

by Victor Newman

Be we ever so staid, games are an important activity in our lives. People will spend large amounts of money learning to play games of any type and in acquiring professional, expert advice to improve their own performance. But games can also be put to use.

We all enjoy playing games. Some human activities are more obviously recognisable as games than others. The attractiveness of games has long been recognised by people interested in training and education. Such games rarely offer 'real' prizes – the victories are painless, the casualties (nearly) always live to fight again, and sometimes we get to learn a lesson or two from our defeats. Such lessons can lead to improved skill within the game, but depending upon the realism it is rare that playing will lead to an improvement in personal skills or in capacity to deal with real-life situations.

not necessarily by how we use it. This traditional system creates few incentives, encourages subsistence-learning and rarely transfers to how we live or organise our lives.

Some games are more attractive than others; similarly some games have more teaching potential than others. Group games involving teams are attractive because they allow competition and cohesion. The TOGPSP method develops the student's ability to operate systematically under some stress. The students learn together in teams – initially in teams of three, later in teams of six. Gradually, as they work through the games cycle, they develop increased confidence in their own ability and in the tools which they have been given to play the games successfully.

By harnessing the unique dynamics of the team and its need to succeed in order to prevent its collapse as a unit, individuals are motivated to learn quickly and effectively. As the team develops a track-record of success, the more committed it becomes to working as an effective team.

If we practically demonstrate our tools via some action within a short time, then consistently criticise our use of the same tools in a positive way, the instructor can begin to withdraw from a teacher/master-of-ceremonies role and assume the role of training co-ordinator to the teams.

We play two types of game – micro- and macro-tasks. Micro-tasks are obviously games and usually fun. Micro-tasks develop the use of the games tools and

The tools
Both micro- and macro-tasks involve systematic use of tools to do two things: problem-solving and task-presenting.

The tools themselves are not new – all that is new lies in the cumulative, systematic approach, via the games, to training and self-development.

As an example, one of the TOGPSP tools is modelling problems in order to develop and present solutions. Modelling, using toys, paper or tokens to stand for various elements of the problem, plus the systematic development of options, enables students to work through the possibilities within a situation which normally they might find difficult even to articulate.

Some individuals may initially resent the conscious use of tools designed to direct attention more accurately upon problems. It is as though some people feel that a systematic approach would somehow diminish them personally, rather like the African tribesmen who refused to allow European anthropologists to photograph them in the understandable belief that somehow their essence or soul could be stolen by the camera.

It has been part of my experience that some people when under time-pressure find themselves solving problems automatically with this system. TOGPSP presents the key to this individual crisis – its tools serve as keys to many different locks. We can of course smash every locked door that we face – but a relatively universal key saves a lot of time and misdirected effort.

TOGPSP tools are no more specialised than say, the alphabet, and just as easy to learn.

The project
The Task-Oriented Group Problem-Solving Project has just begun. Behind it lie three years of development work within selected groups of young people. Two schools and a technical college are introducing TOGPSP methods and materials in the first phase of the project. Each has identified its own characteristic area of need which it sees TOGPSP as filling. The feedback from users will lead to an improved repertoire of games, and the associated statistical analysis will give some idea of the utility of the material.

Within a year we may see experienced students completing the learning by themselves teaching individual teams and guiding them through the micro- and macro-tasks themselves.

The dominating constraint behind TOGPSP has always been one of resources. The first cycle of macro-tasks has been developed with this in mind. The development of further macro-tasks is a different matter, and prospective interested TOGPSP users may find it useful to combine resources.

A problem is only approached methodically when all else fails. *TOGPSP Handbook.*

The purpose of TOGPSP
The Task-Oriented Group Problem-Solving Project has been set up to develop special games and tools to play them, which will enable young people to transfer the lessons learnt into their own lives.

In school we can listen to a teacher with some attention and spend a lot of time copying data into our notebooks in the form of maps, lists and diagrams. We are tested by our ability to reproduce this material,

macro-tasks put it all into practice under stress. Micro-tasks might easily enliven a party where no one was mixing – like the micro-task where the team opens, cooks over a naked flame and eats a can of beans, blindfolded, silent and within five minutes.

Macro-tasks last up to two hours and require the deployment of all the tools. They are not designed with hidden criteria or values in mind – or based upon knowledge of a particular physical trick.

LESSONS LEARNT - JIGSAW SPRINT   25/2/87

(BE PREPARED TO DUMP PLAN 1.)

↓

FLEXIBILITY

✓ / ↗ RESPOND.

PRACTICE (MAKES PERFECT).

ENCOURAGEMENT

↓

TEAMWORK + COMPETITION
              +
         URGENCY.

↗

TARGET

→ ACTUAL EVENT STRESS.
   (TIME PRESSURE).

ALLOCATE INDIVIDUAL ON BASIS OF
   STRENGTHS + WEAKNESSES.

DELEGATE
SHARE THE WORK-LOAD.

1. SYSTEMATIC : AFCOP + TT/AG.
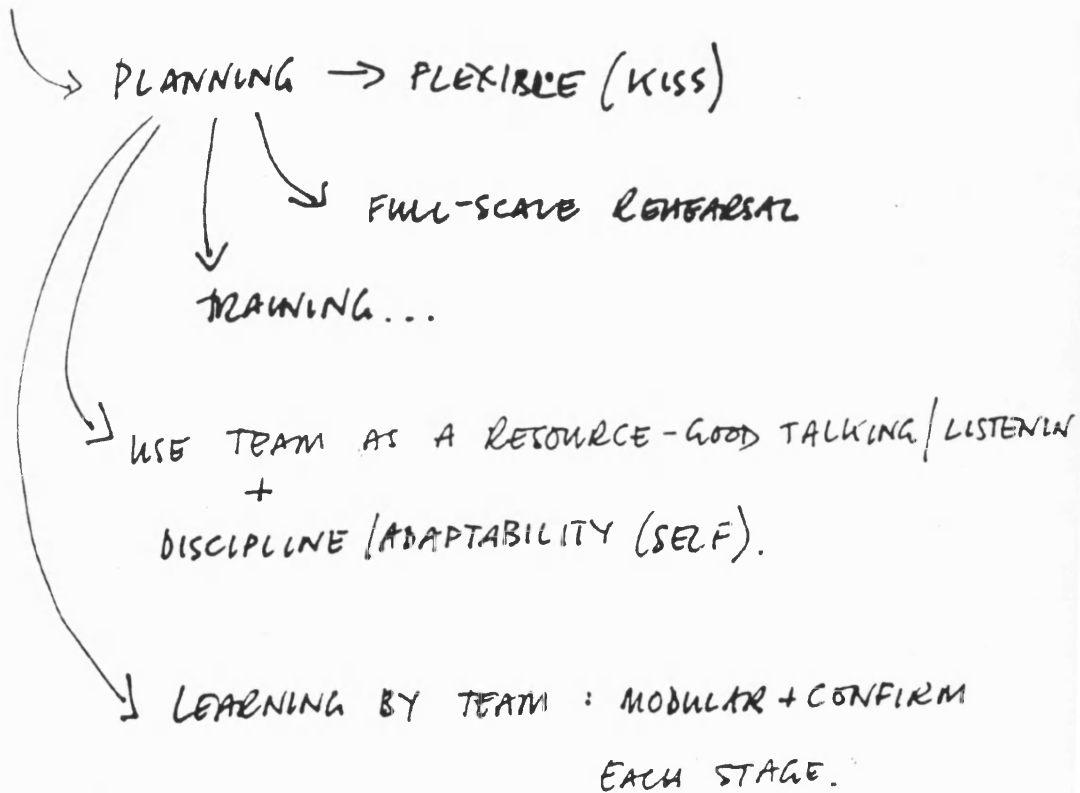2. GOOD METHOD MEANS SPEED.
3. MURPHY'S LAW
4. KISS.
5. DIN/TIR.

(KODAK.)

LESSONS LEARNT - CONE DANCE

UNDERSTOOD / COMMON AIM ⟶ DIRECTOR / TASK /

TEAM LEADER

↓

STANDARDS / QUALITY

(ASSESSED, ESTIMATE

CONTROL)

METHOD + TEAMWORK + COMPETITION

⟶ PLANNING ⟶ FLEXIBLE (KISS)

FULL-SCALE REHEARSAL

TRAINING...

USE TEAM AS A RESOURCE - GOOD TALKING / LISTENIN

+

DISCIPLINE / ADAPTABILITY (SELF).

LEARNING BY TEAM : MODULAR + CONFIRM

EACH STAGE.

(KODAK)

LESSONS LEARNT - BUILDEX

SEE IT FROM WORKERS' POINT OF VIEW. (PERSPECTIVES.)

COMMUNICATION

LISTENING

ISSUING PRECISE INSTRUCTIONS

CONFIRMATION

EXPECTATIONS/ STANDARDS OF PERFORMANCE/

MOTIVATION

PLANNING.

AFLOP + TT/PG + MODELS

→ PRACTICE + TRAINING

↓

FLEXIBILITY/COPING WITH NOVEL CONDITIONS

TIMING + METHOD/ TRUST

↓

TEAMWORK!

KODAK

TMSD 2

COURSE MEMBER'S NAME...........................

TEAM MANAGEMENT SKILLS DEVELOPMENT PROGRAMME

ASSIGNMENT 3

TACTICAL PROBLEM SOLVING

1. Identify a current problem which is affecting your work group or team or shift. When identifying the problem consider the following criteria where appropriate.

    -   Problem ownership - you must own it - yours to solve.
    -   History
    -   Size or cost
    -   Technology
    -   Goals and objectives for you and the work group
    -   Environment
    -   People
    -   Organisation Structure

2. Agree the problem with your Kodak Tutor.

3. Appply the Tactical Problem Solving techniques (AFCOP - Tactical Thinking - Plan Grid) to the problem.

4. Write a short report highlighting the following:

    a) The problem criteria.

    b) A record of each process stage ie AFCOP, Tactical Thinking and Plan Grid.

    c) What has been learned and developed through using the technique.

You should aim to submit this report in course week 5, commencing Monday 7 December. Any problems you encounter should be discussed with your Kodak tutor or Mike Johnstone.

Date completed.......................................

Harrow College Tutor's comments.........................

....

....

....

SUMMARY OF FEEDBACK MEETING BY TOGPSP/CORDSKI INSTRUCTORS:

Venue: Military History room, MSW Library - 16th December.

Present: Victor Newman (Co-ordinator)
Major Ron Jones (SEO)
Captains Rundle
Owen
Watts
Cartwright
Rumbles
Gus Fraser
Mike Gambier
Sgt Stonier RCT (Cell 2ic)

1. 3-day Microsystem teaching much better than old system.

2. Problems initially with subject jargon. We are always going to face the problem of jargon I believe that in essence we are teaching a new language with associated concepts.

Instructors probably more useful second time round. No time for induction.

Glossary needed: of phrases and terms. Otherwise feels like the Emperor's new clothes.

The ideas are very simple: 4 stages - intro, AFCOP, Plan-grid, GSMESC. If we relate Mits to these stages, return to statement system.

Problem of Exercise DS sometimes not being 'au fait' with criteria the first time round.

Troop DS need to attend to understand what is happening. With the best intentions, all the cell's explaining doesn't eliminate this basic problem. Problem of TpCdrs' seeing their role as detached from troops.

Suggestion of having an 'uncle'/ experienced instructor available to pre-brief on their first course, prior to each lesson and resident during their lessons. (1+1)
Difficulty of knowing which questions to ask, as an instructor?
Gradually feed them into the teaching .

3. The Microtasks.

Mits expendable, yet all seem to teach what has to be learnt.
'Cuffed' stats on 2 tps feedback suggest JLs feel it's OK:
48% ok, 17% too many, 33% too few.

ACTION= MUST ANALYSE TPFB SHEETS Mit and Mats.

FB possibly swayed by the most recent problem, as teaching the most.

A good package, but too much in it. Mits in actual fact a stalking horse
for systematic behaviour, not an end in themselves.
Tendency not to notice the minor yet significant changes in the HB.

How to handle the teams during the lessons. Some correctly rotating
teams and individuals for action and reporting during the lessons.

Need for a task with only one C/O, which yet requires coordinated PG.
Pointed out that this contradicts the C/O ethos. Mits would need to be:
close, physical, phaseable, employing the whole team outside (Wendy Ho)
to follow Jigsaws.
ACTION !
Use of Vufoils for teams to explain their PGs.

DEBRIEFING

JW: comments upon the success of developing the student DS idea to
complete a FB report on each triad team member (refers Mit 10) who is
also responsible for conformity of team to planning times.
AF: try to introduce this earlier (Mit JS?), also why not make Team
Leader explicitly responsible for post-task debrief with DS just to
wash-up afterwards (really talking about Mat phase - but why not ?)

Problems with Orders Headings, boys not consistently successful. VN: You
have to be more pedantic. The problem of extraction of student Orders.
The point needs to be made that the Exercise is a teaching situation as
well.
Problems: Extraction (again), transfer of AFCO + PG to own GSMESC, 'do'
orders, the tell a story ! (JW). VN bins new Mit idea.

We are trying to turn the boys from being passive boys , to whom
training is done into boys who do things with their training. Not used
to listening to instructors who are not woffling - everything is for
real.

TOGNOT: Some like it, unselfconscious, some not.

MITs:

1. OK very good for C/O.
2. Too easy.
3. Good, requires a lot of experimental kit, which tends to be
   destroyed.
4. Very good if modelling enforced (as per script). Video particularly
   useful, best after task.
5. Too ethereal.
6. Good, fun and competitive.
7/8. We don't teach.
9. Very good, brings out the need for rehearsal. RW task to emphasise
   Priority as Modelling and rehearsals.

10. It's in the wrong place, needs to come earlier, before Conex (Mit9). Good because enforces briefing strangers, and rehearsals.

Mits(continued)

11. Best entertainment value, a real Murphy's Law task. Good Feedback lots of unexpected factors, 'got to think it through'.

New Suggested Mit Order:

1,3,4,6, (Objectives 6,7,8) 10,9,11.

MACROTASK PHASE

Tendency of the students to be more expert than DS. We are lucky to have the present SQ. MG anecdote of it's troop use on Tac Ex, and subsequent success.
Some DS grade on basis of role in troop. Reconstruct grading criteria.
As before, but with these additions:
c. same but with some control of the group.
d. Failed to give functional O group, or control of task.
e. Attended Trg and exercise.

Adopt +, - symbols instead of 1-4 system of contribution when follower.

AF: need for more time and official model kit. Pre-training phase task list (JW).Nominate T1 instructors to handout lists as part of curriculum.