

PROBLEMS OF
BEING LEFT HANDED

sanjay jain

Problems of Being Left-Handed

Special Project Report

by

Sanjay Jain

under the guidance of

Prof. Kirti Trivedi

Industrial Design Centre

Indian Institute of Technology

Bombay.

October, 1985

I. D. C. Library

L. L. T. Bombay.



I extend my grateful acknowledgement to Prof. Kirti Trivedi for his quick and meaningful suggestions and keen perusal of the script.

To friends, for their little observations which drove a certain point home.

To Mr. Dilip Datey, Crompton Greaves.

Colonel Srivastav, DGI Complex.

Dr. Pankaj Jain

Brig. D'Lima, I never met.

And to my LEFT-HANDEDNESS, for, what it taught me.

Dedicated to the children growing up left biased and don't care.

L D. C. Library
L T. Bombay.

CONTENTS

BEGINING..... 1

- . Design for the minorities
- . Human actions and behaviour
- . Laterality
- . 'Action-study' table

FACTS..... 5

- . Human life '12 weeks to 8 yrs.'
- . Human race
- . Language
- . Religion

PHYSIOLOGICALLY SPEAKING..... 7

HANDEDNESS..... 8

- . Left-handedness
- . Are you a left-handed person ?

PROBLEMS OF BEING A LEFT-BIASED..... 12

- . Personal
- . Societal
- . Mundane
- . 'Action vis-à-vis severity level' table
- . 'Action vis-à-vis solution feasibility'

THERE IS A LEFT-BIASED WORLD TOO..... 14

ADVANTAGES OF BEING RIGHT-HANDED..... 16

SUMMING-UP..... 17

BIBLIOGRAPHY..... 18

.....

BEGINING.....

Design for the minorities

1

• All people are handicapped
For at least part of their
lives, in some way.
As designers we must find
their REAL needs.

* Victor Papanek

A designer's prime function is to solve
problems -- this means that the designer
must also be more sensitive in realizing what
problems exist. Sometimes a designer discovers
the existence of a problem that no one had
suspected before, defines it and attempts to
solve it. When the designer is a part of the
problem, he is part of the answer also.

I am left-handed.

We design, usually, for the majorities.

The process of redesigning is greatly simplified
by considering hierarchy in income-
groups.

We design for the rich

We design for the very rich

We design for the stinking rich

The minorities are forgotten in the process.

The elderly and the old

Pregnant women

• My first attempt with right hand.

Human actions and behaviour

2

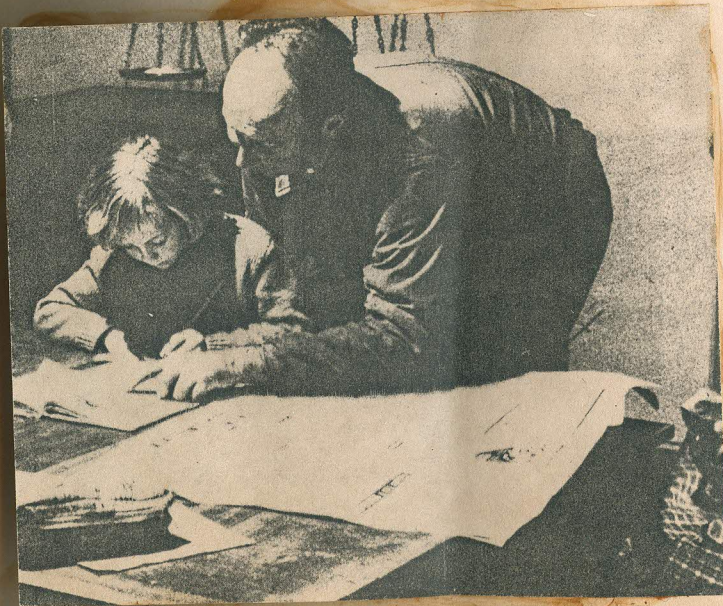
Disadvantaged and Retarded Children
Left-handed people
Etc etc...

In this age of 'mass production' where the assembly lines are laid to generate thousands of products-solutions - this complex and almost unknown world of left-handed people is neglected.

We wave
wink
clap
shake a fist
wave hands
cock an eyebrow
cross our legs
write a letter
operate a lathe
fold our arms
eat food
put an eye on the viewfinder
thread a needle
steer a car wheel
play golf



Laterality



Any of such actions require a clear cut, decision spontaneously and unconsciously taken to activate the two halves of the brain 'whether to use left or right side of the body'

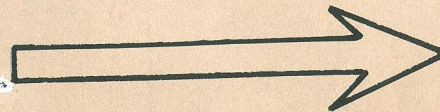
An action demands more of the favoured side of the body from the other. This laterality could be demonstrated.

Laterality in human action and behaviour is partially manifest in left-handedness
right-handedness

General discussion on L and R handedness boils down to the gross simplification of equating of left hand and right hand with the act of writing.

There are many more one-sided actions performed during the day.

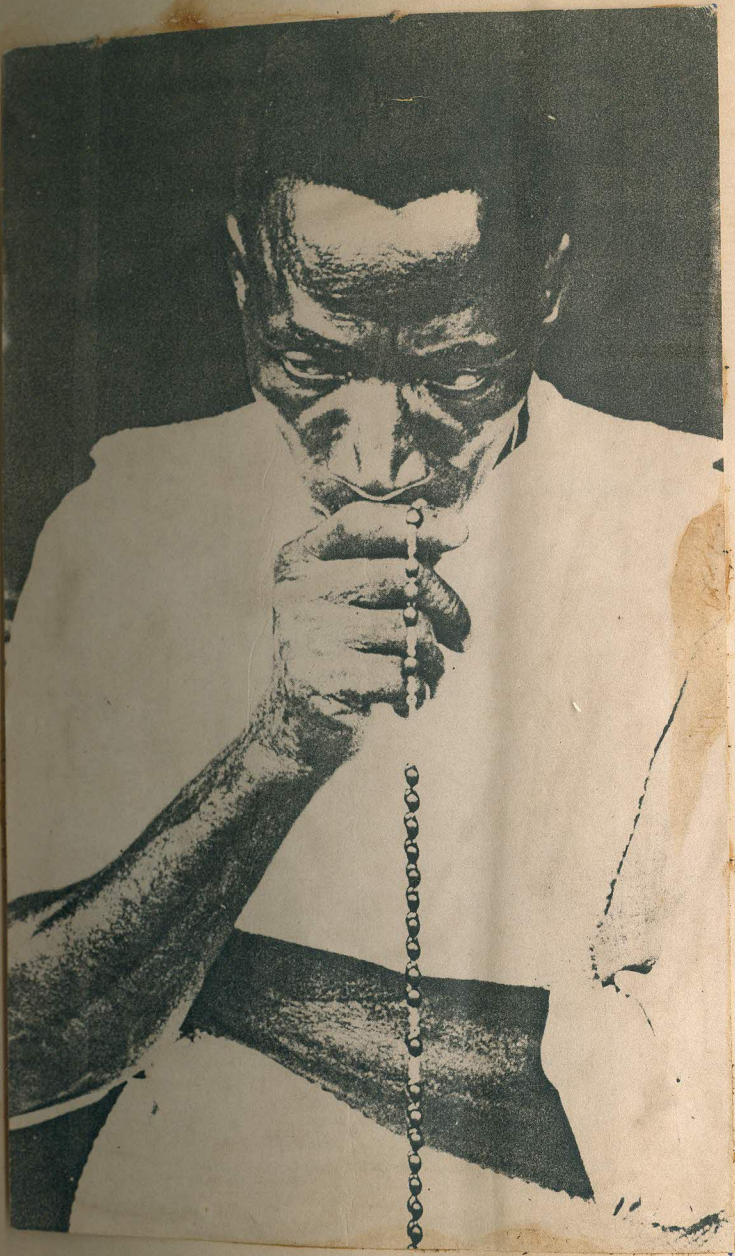
A study is made on 10 people on the kinds of actions they are used to perform. The results are tabulated.



ACTIONS	RESULT	REMARKS
One Handed Movement • Beckoning • Writing • Scratching	9 out of 10 people have the right bias	Gestural actions are spontaneous but writing involves TUNING IN with proper head and shoulder posture.
Two Handed Movement • Striking the palm with the closed fist • Threading the needle • Playing hockey	Most of them have right bias	One hand is more active and the other passive or static.
No Handed Movement • Cocking the head • Jutting out the hip	Equal no. of people having left and right bias.	Quite different body organs are involved.
Motionless Movement • Clasping hands together • Sitting cross-legged	The person using left hand for writing has a left bias	No dynamic actions are involved.



- 12 week babies use both hands with equal vigor
 - $2\frac{1}{2}$ - $3\frac{1}{2}$ yrs. babies are bilaterally active
 - The pendulum of switch over from left to right handedness continues
 - Most peculiar feature of this sequence is the end result -
 - Most of the children show a strong right bias toward Right-Handedness.
 - 1 out of 10 people is naturally left-handed
 - 200 million people in the world are left-handed
 - Left-handedness has been RIDICULED
DISCOURAGED
BANNED
- with varying degree of strictness in some part of the world, ours inclusive
- Most of the parents encourage school teachers to force the children into RIGHTEOUS ways and vice versa.



6

- . Different languages contain INSULTING words for left-handed individuals.
exempli gratia -
SINISTER — Latin of Left handed
GAUCHE — French for left/clumsy
ZURDO — Spanish for : to go wrong way
उल्टा — Hindi for Wrong
- . Christianity — God - Right-handed
Devil- Left-handed
- . British Court of Law —
'Take the book in your right hand and swear an oath that.....
- . Islam — The sheep is invited to sit on right side and the goat, in the left side after which it is sent to fire and be cursed
- . HINDUISM |
BUDDISM | } Subscribe to | Right—Clean
JAINISM | } Left —Unclean

- Human brain consists of two halves left and right cerebrals and these two hemispheres are not mirror image of each other.
- Nerve fibres carrying the brain's instructions cross over from left to right on their way to the arm and hand Left hemisphere control the right bias Right hemisphere, the left bias
- Left hemisphere has a region which deals with SPEECH and right, 3-D SPATIALITY
- Stuttering and Dyslexia (difficulty in reading and comprehending) are found in left-handed more often.
- Handedness is the ultimate stage of motor development.
- Most of the people have left hemisphere dominance.
- Sometimes, due to RNA and DNA ratio configuration the foetus develop left side muscles - but this is rectified at a later stage. Same ratio also affects the brain development.
- When discouraged at the developing stage left-handed children start mixing instructions and thereby start stammer.

MOTOR DEVELOPMENT

Control over bodily movement through the co-ordinated activity of the nerves, the nerve centres and the muscles.

MOTOR SKILL

It is an automatic, accurate and rapid action.

HABIT

A well learned skill becomes an habit.
A habit is an repetitive activity, compounded with recognizable movement of patterns.

Self help habits - to be independent
Social help habits- for peer acceptance and natural desire to belong to a group by imitation
Play habits - to enjoy activities when away from the peers

Habit develops into HANDEDNESS

- Left-handedness is rarely hereditary
- Extensive research shows that left H ness is a result of social conditioning and training, that is -



9

- .. how the child has grown up amidst parents who are left-handed, by imitation
- the objects closer to the child used to be on left side
- the role played by the parents in discouraging/encouraging left-handedness

Let us recapitulate all aforesaid and arrive at a complete definition of left-handedness, or more precisely, LEFT BIAS.

Left Bias is the predominant use of left side of the body dictated by

- + Physiological proficiency and
- + Psychological preference

to carry out an action or a work task in terms of Manoeuvrability

Power

Fine dexterity

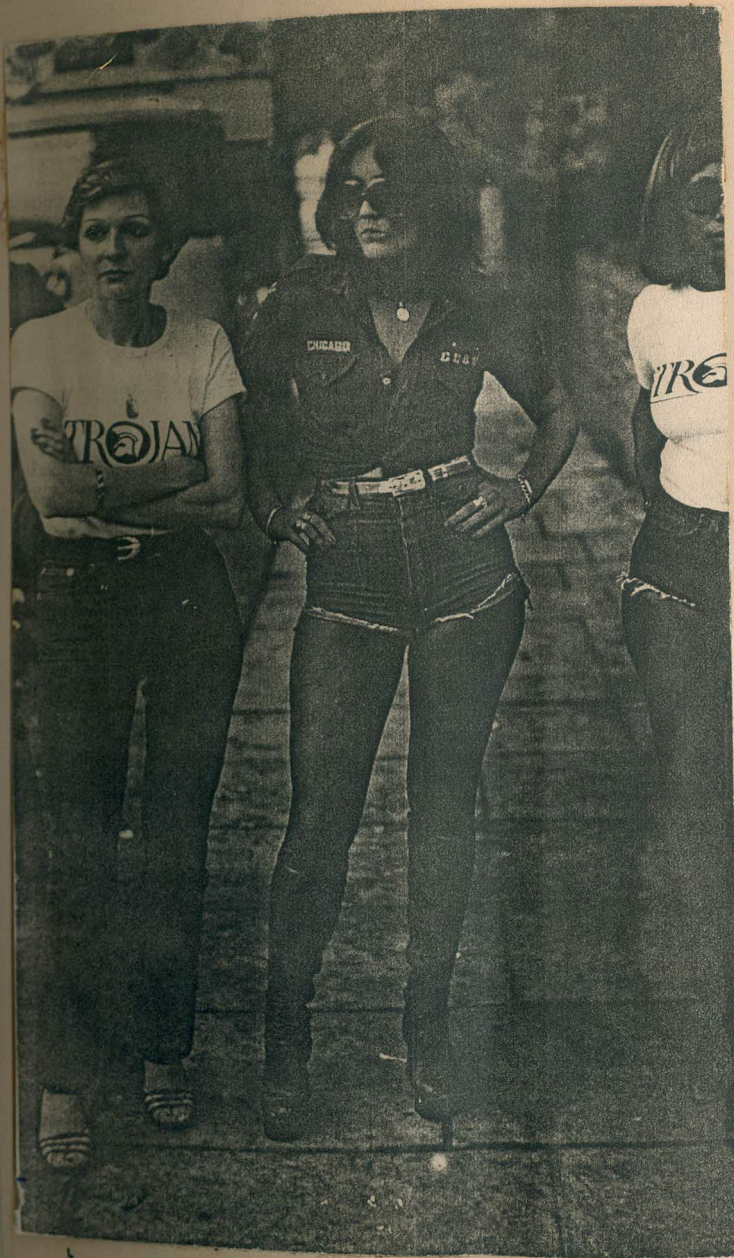
Smoothly

Repetitively

Accurately

Rapidly

with proper differentiation of cues and continual correction of error with recognizable patterns of movements.



Now, the way we become fixated on certain patterns of movement is not simple. Every RH person has left handed moments and and vice versa. Many actions are so automatic that we are seldom fully aware of how we operate our bodies.

How far 'holding a pen/pencil bias' extends
in our body ?

How much left biased we are ?
right biased

Whether we are left eyed
right

left eared
right

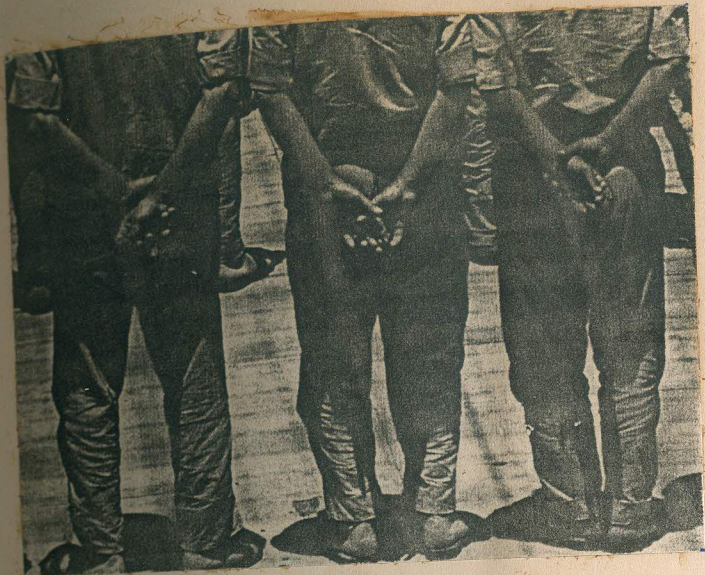
left handed
right

left legged
right

Let us do a simple test -

Answer following querries either in L or R -

1. Imagine centre of your back is itching.
Which hand will you use to scratch it ?



11

2. Interlock your fingers.
Which thumb is uppermost ?
3. Applaud/clap.
Which hand claps more vigorously ?
4. Wink at an imaginary friend on your left side/on your right side.
Which eye is more difficult to operate ?
5. Put hands behind your back.
Which hand holds ?
6. You can't hear the words - they are too feeble - the sound coming from front side.
Which hand you use to cup your ear to hear better ?
7. Count to three on your fingers - using the forefinger of other hand.
Which side forefinger will you use ?
8. Tilt your head to the shoulder.
Which shoulder it touches ?
9. Fold your arms.
Which forearm is uppermost ?
10. Cross your legs.
Which leg is uppermost ?

Chances are that you did not answer Right or Left all through.

- Personal
- Societal

Left-handedness is one of the hazards in motordevelopment.

Self conceptualization -

When children realize that they are different just because they are left-handed and interpret it as inferiority they grow self conscious of this differentness.

Social conceptualization -

LH ness interferes with their learning skill because the skills are meant for the majority - in the process they develop inferior skills.

Their problems in day to day life experiences in the manmade world are more complex than than realized.

The tabulated structure which follows attempts to categorize the problems and reasons into various 'severity levels' Thereafter the same problems are put in various 'solution feasibility states'

A day in the life of a left-handed

'Action vis-a-vis Problem severity chart'

'Action vis-a-vis Solution areas chart'

Refer to the sets of the charts in the
back side POUCH.

• In Sydney there is a left-handed shop

• USA celebrates 'the day for left-handed' in the month of August

• Hindu mythology subscribes to the theory that 'left is auspicious for the women' It is manifest in the traditional way a husband and the wife stand during marriage ritual



The husband stands on the left side.

When a woman's left eye bats it is thought of a good omen or if the left foot stumbles

When the respiration (inhaling and exhaling) is left nostril biased it is auspicious.

'Theory of Ida and Pingala.'

• Left-handed cheque books now exist

• The common typewriter is the only left-handed machine universally used.

The key-board is designed so that the left hand, as well as certain fingers

of the right hand are forced into doing comparatively more work.

• World of Sports

Left-handed boxers (southpaws) have an edge over their right-handed rivals because they could feign and dodge in a manner which can't be prejudged.

In cricket, due to the dominant right cerebral which deals with 3-D perception left-handed batsmen can place the ball in space elegantly.

Also, they are too difficult to get bold out for the right-handed bowler.

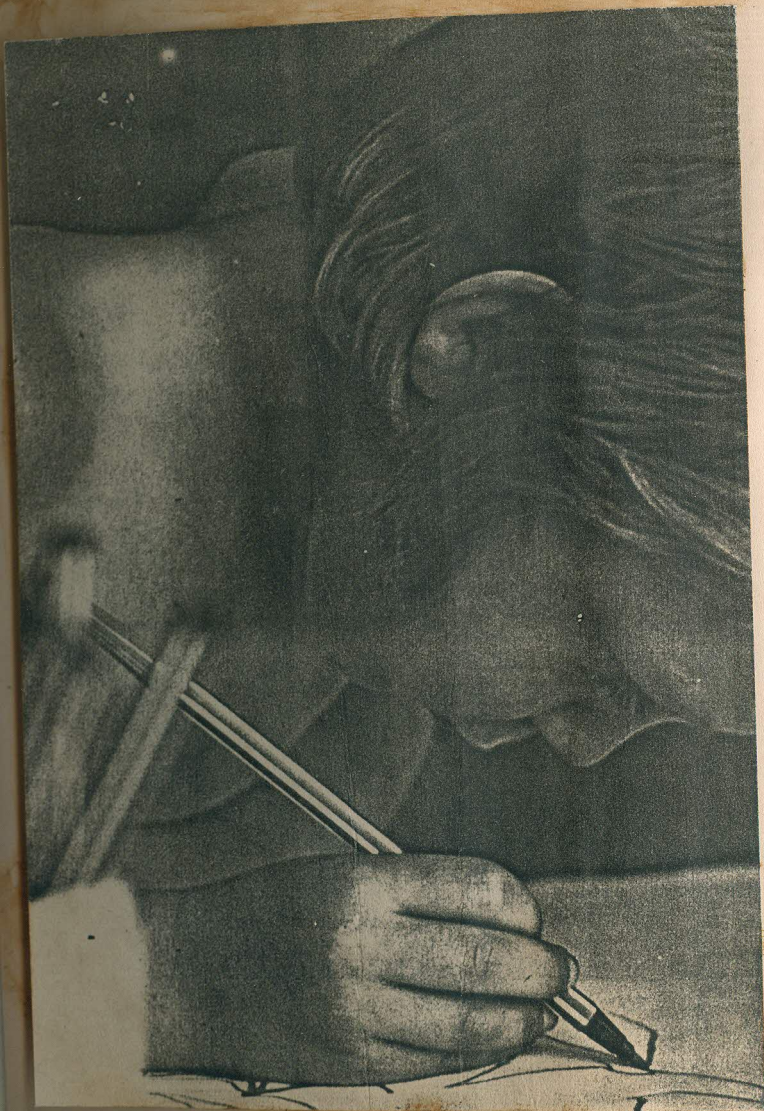
In tennis, Martina Navaratiлова and John Monroe are left-handed - endowed with a powerful 3-D perception.

- Left-handed people are good architects and designers -

Leonardo da vinci

Navigators of Polynesia

...
...



- Childhood learning is facilitated because guidance and demonstration are more meaningful.
- Skills are learned speedily and are less fatiguing.
- Conformity to social expectations are facilitated.

Since childhood is the crucial period for learning skills and determining handedness left-handedness could be prevented from being a habit only if —

- The prevention occurs and directed before the habit is established but it is to be decided by the parents judiciously.
- Situations could be created in which right hand could be naturally forced by providing toys and playthings with proper motivation.

PROBLEMS

ASYMMETRY

INCOMPATIBILITY

MIRROR IMAGE

LACK OF SAFETY

POSTURAL AWKWARDNESS

SOCIAL TABOOS

RELIGIOUS HANG-UPS

SOLUTIONS

FLEXIBILITY

SYMMETRY

ADAPTIBILITY

AWARENESS

SHAKING OFF HANG-UPS

INNOVATIVE IDEAS

AUTOMATION

It requires looking at this design challenge microscopically and with sensitivity which should be inherent in Design methodology —

BIBLIOGRAPHY

18

01. Papanek, Victor. 'Design for Real World!
Granada Publishing Ltd. 1977 (Reprinted)
02. Morris, Desmond. 'Manwatching'.
Triad Granada Publishing Ltd. 1982
03. Bee, Helen. 'The Developing Child'.
Harper and Row, Publisher, Inc. NY 1981
04. Lerner, Janet. 'Children with Learning
Difficuly'.
Houghton Mifflin Co. Boston (II ed.) 1976

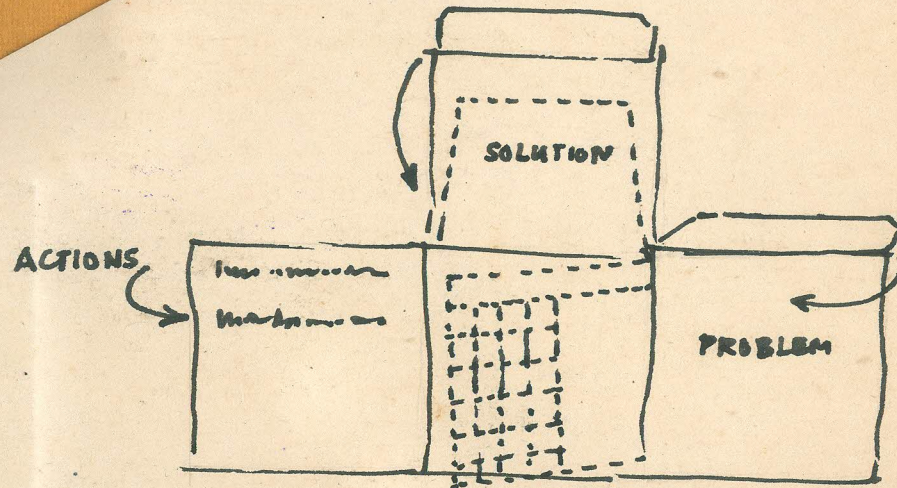
....

I. D. C. Library
L. I. T. Bombay.

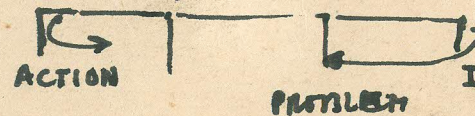
L.D.C. Library
L.L.T. Bombay.

• HOW TO REFER

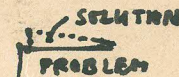
?



• TO SEE 'PROBLEM VIS-À-VIS SOLUTION AREAS'
II $\int$ SOLUTION



- OVERLAPPING AREAS
WILL BEAR NON-BLACK COLOUR GROOVE.



70 80
A DAY IN THE LIFE OF LEFT HANDED -

ACTIONS

MORN

NOON

EVE

NIGHT

Action and Behaviour

● Sportsequipment

. hocky stick

. golf tee

. fish reel

● Musical Instruments

. learning Tabla

. learning Guitar

. learning Sitar

. learning Piano Accordion

. learning Violin

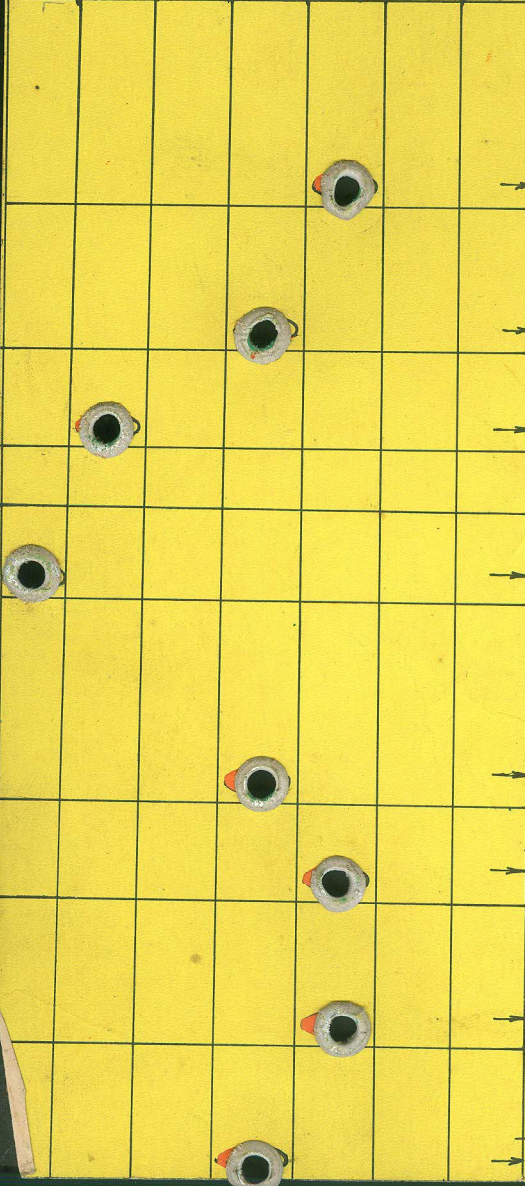
SOLUTION
AREAS

Conversion
Flexibility
Symmetry
LifeH products
Adaptation/
Adaptive gear
Automation/
Innovation/
Awareness

LH design calls for
a total structural
change

Mirror Image
 Awkwardness
 Incompatibility
 Reversal
 Adaptability
 Lack of safety
 Social taboo

WHY ?



- Left handed grip is not allowed due to obstruction rule
- Striking surface is on the left side
- The lever is on left side
- Tabla - Right side
Dagga - Baya side
traditionally, it poses problem.
- String arrangement facilitates RH person
- The overall structure and string arrangement suits a RH person
- The keys are on right side (which require more dexterity)
- String arrangement