JAMES A ROBERTSON AND ASSOCIATES

EFFECTIVE STRATEGIC BUSINESS SOLUTIONS

SOUTH AFRICA

ENGINEERING TO THRIVE

Presentation to the Council
of the South African Institution of Civil Engineers

by

Dr James Robertson PrEng

JAR&A (c)
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SOUTH AFRICA

ENGINEERING TO THRIVE

- In South Africa by choice -- share the dream
- An engineer -- technical focus
- 18+ years -- “bring the discipline of engineering to the I.T. industry”
- Why information technology investments fail
- How to succeed
- --> why technology (electricity, roads, sewerage, etc) investments fail and how to succeed -- extrapolation

A CRITICAL PRINCIPLE FOR SUCCESS

Engineer Against Failure

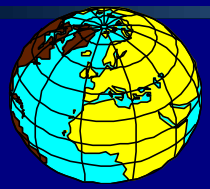
Engineers do NOT design bridges to stand up!

A CRITICAL PRINCIPLE FOR SUCCESS

Engineer Against Failure

Engineers do not design bridges to stand up!

They design bridges NOT to fall down!



CONTEXT: INFORMATION TECHNOLOGY AN INDUSTRY CHARACTERISED BY FAILURE

"I.T. is the next corporate disaster waiting to happen"

Professor Richard Nolan cited by Professor Rossouw von Solms

Why?

CAUSES OF ~~INFORMATION~~ TECHNOLOGY INVESTMENT FAILURE

1. (30%)
2. (20%)
3. (15%)
4. (12%)
5. (10%)
6. (8%)
7. (5%)

(Remember that I.T. Is value inert)

CAUSES OF ~~INFORMATION~~ TECHNOLOGY INVESTMENT FAILURE

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CAUSES OF ~~INFORMATION~~ TECHNOLOGY INVESTMENT FAILURE

65%

1. ~~Information~~ technology mythology (30%)
2. Lack of executive custody and inappropriate policies (20%)
3. Lack of strategic alignment (15%)

To the SOFT issues

4. Lack of an engineering approach (12%)
5. Poor data engineering (10%)
6. People / soft issues (8%)
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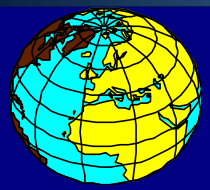

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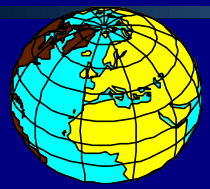
And ... Remember ... Technology I.T. is ALL about PEOPLE!

(Remember that I.T. Is value inert)

JAR&A (c)



CONTEXT: INFORMATION TECHNOLOGY AN INDUSTRY CHARACTERISED BY FAILURE

"I.T. is the next corporate disaster waiting to happen"

How do you prevent failure?

What questions should you ASK?

CRITICAL EXECUTIVE QUESTIONS

Questions Every Executive Should Answer Before Saying "YES"

1. **Do I have a clear definition of the value proposition that I own now and can communicate to the rest of the organization?**

CRITICAL EXECUTIVE QUESTIONS

Questions Every Executive Should Answer Before Saying "YES"

1. Do I have a clear definition of the value proposition that I own now and can communicate to the rest of the organization?
2. Do I have a clear definition of how the outcome will be accomplished?
3. Is there real acceptance of the real effort and investment required?
4. Is there real business commitment?
5. Am I (CEO / sponsoring executive) willing to be held accountable?
6. Am I willing and able to hold the responsible executive / manager accountable?
7. Am I willing and able to hold the service providers and vendors accountable?

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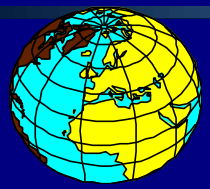


CONTEXT: INFORMATION TECHNOLOGY AN INDUSTRY CHARACTERISED BY FAILURE

"I.T. is the next corporate disaster waiting to happen"

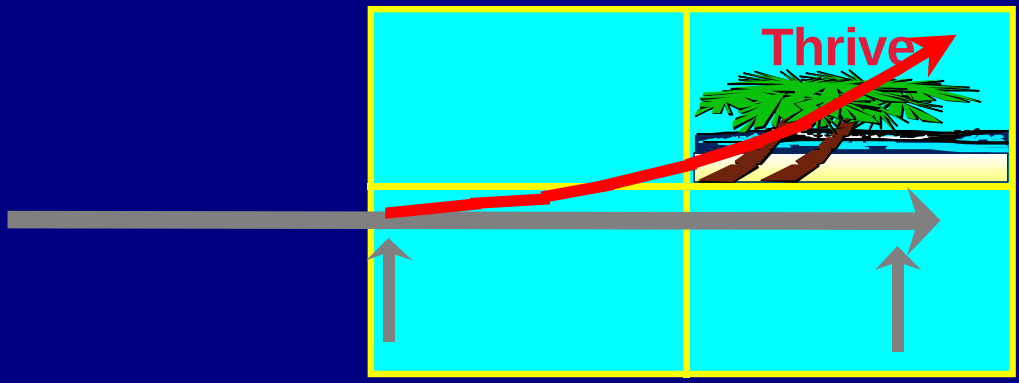
How do you achieve success?

What should you DO?

MANAGING FOR SUCCESS

MANAGEMENT COMPONENTS (% FOR SUCCESS)

1. 25% . . . . . ?
2. 18% . . . . . ?
3. 16% . . . . . ?
4. 14% . . . . . ?
5. 12% . . . . . ?
6. 10% . . . . . ?
7. 5% . . . . . ?



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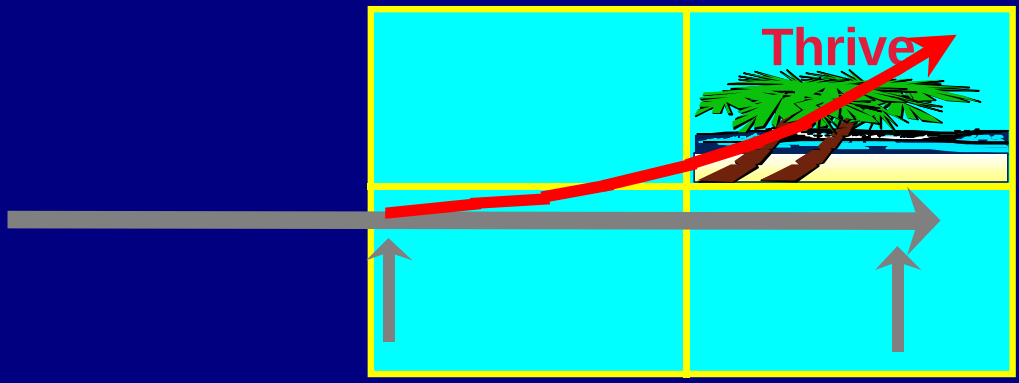
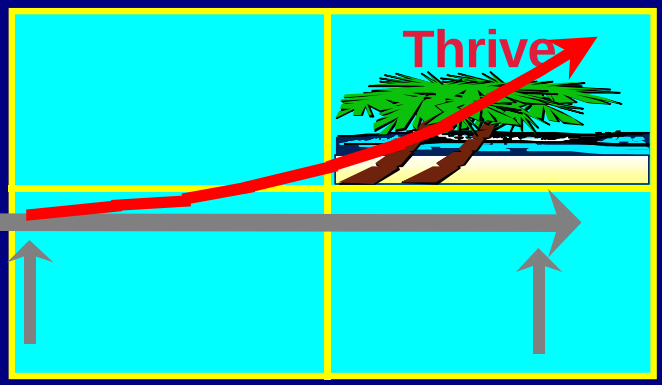
7. 5% -- Technology Components



MANAGING FOR SUCCESS

MANAGEMENT COMPONENTS (% FOR SUCCESS)

1. 25% -- Executive Custody and Policy
2. 18% -- Strategic Architecture
3. 16%-- Strategic Alignment
4. 14% -- Business Integration and Optimization
5. 12% -- Project Schedule, Budget and Resource Management
6. 10% -- Data Engineering and Information Management
7. 5%-- Technology Components



* First 3 = 59%

MANAGING FOR SUCCESS

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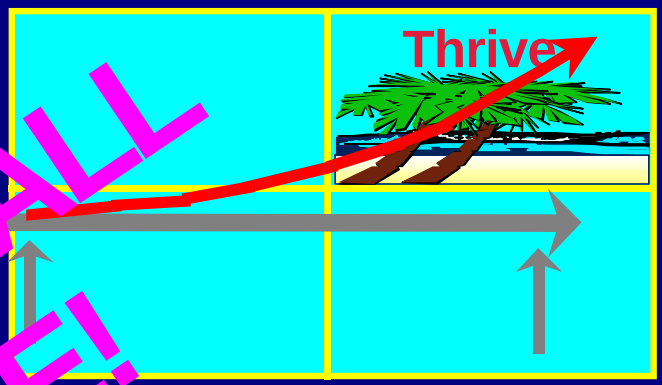

And ... Remember ... Technology IT is ALL about PEOPLE!

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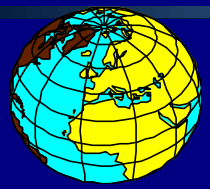

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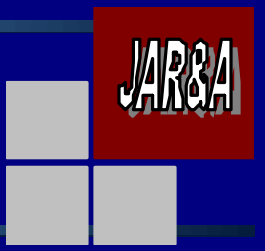


"I.T. is the next corporate disaster waiting to happen"

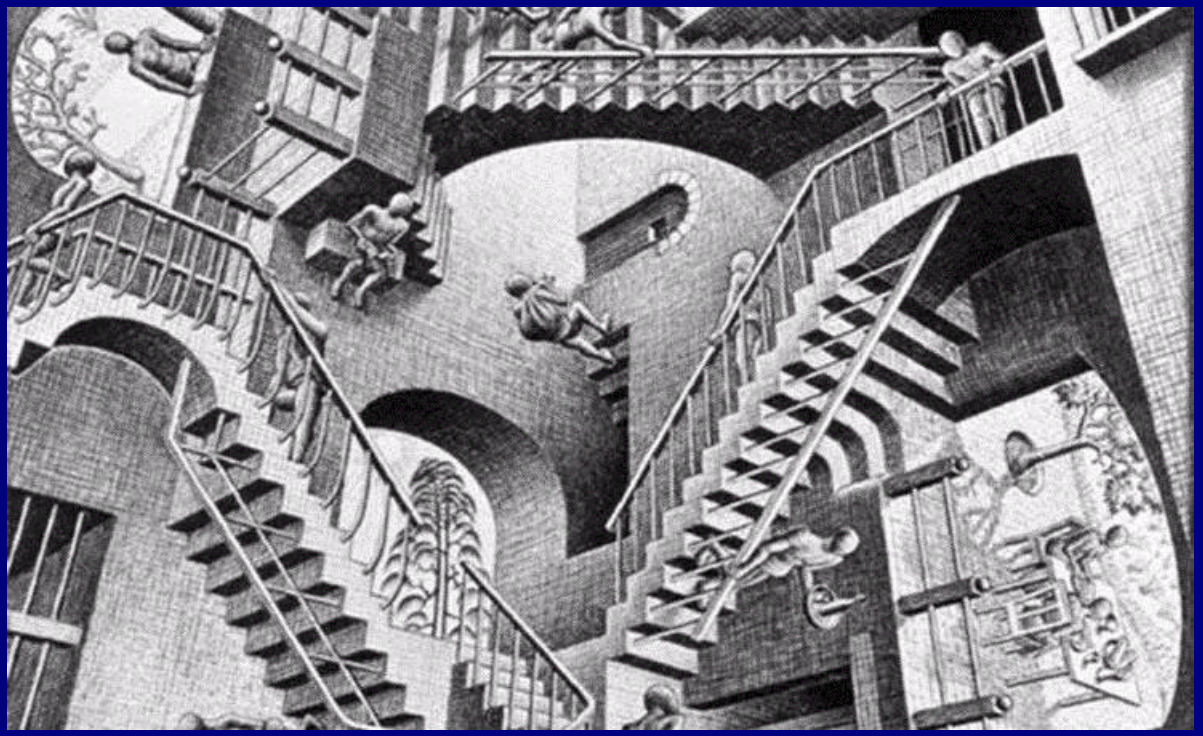
SOUTH AFRICA

ENGINEERING TO THRIVE

What is the relevance?

What do engineers know that most people do NOT know?

IMAGINING THE IMPOSSIBLE



Technology ~~Computers~~ The human mind can imagine the impossible can ONLY do what is real ~~(0's and 1's)~~ Gravity, entropy, etc

STRATEGY DEFINED

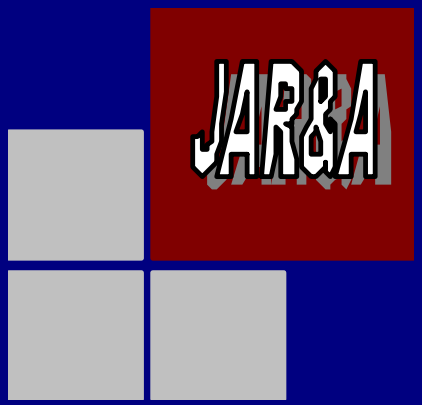
WHAT IS STRATEGY?

STRATEGY DEFINED

WHAT IS STRATEGY?

1. The essence of why a ~~business~~ nation exists and where it is going
2. Vital context to ~~I.T.~~ technology
3. ~~I.T.~~ technology failure is primarily a failure of corporate strategic capability

DOING THE RIGHT THINGS



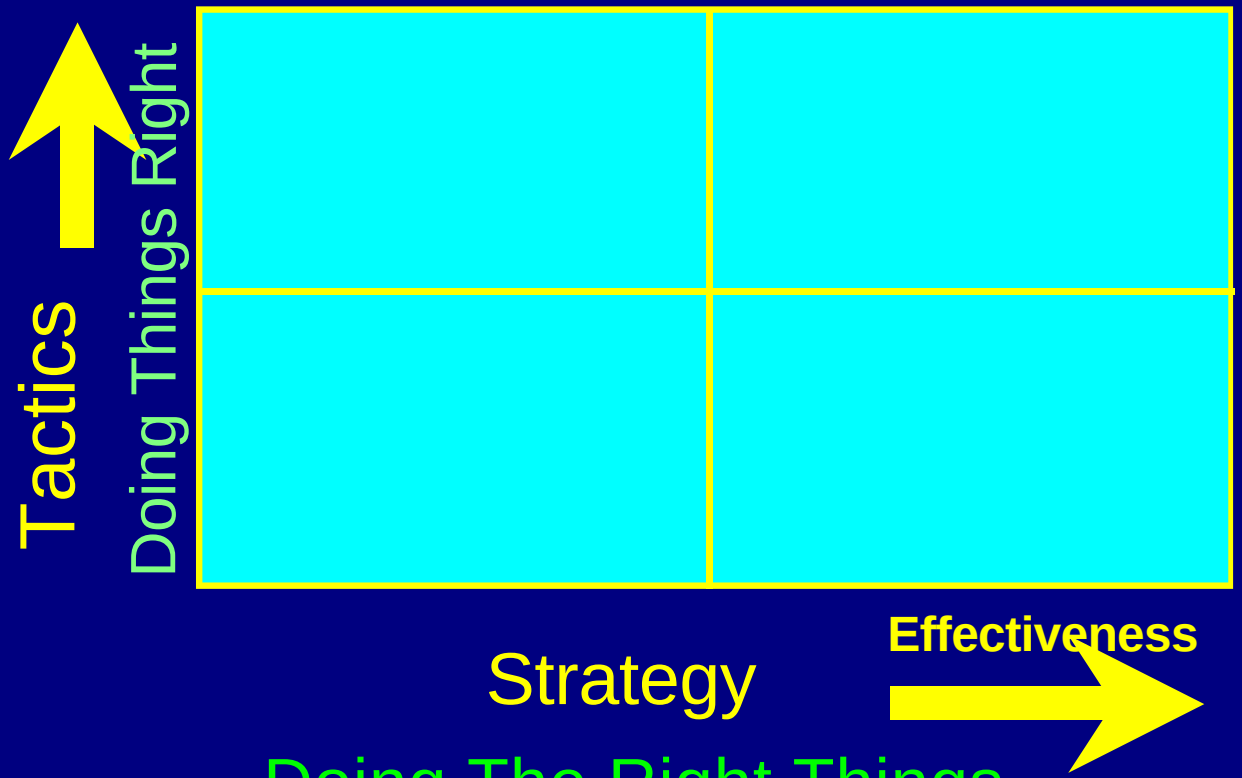
Professor Malcolm McDonald
Cranfield School of Management

DOING THINGS RIGHT

Professor Malcolm McDonald
Cranfield School of Management

STRATEGY vs TACTICS : A DEFINITION

Professor Malcolm McDonald



STRATEGY vs TACTICS : A DEFINITION

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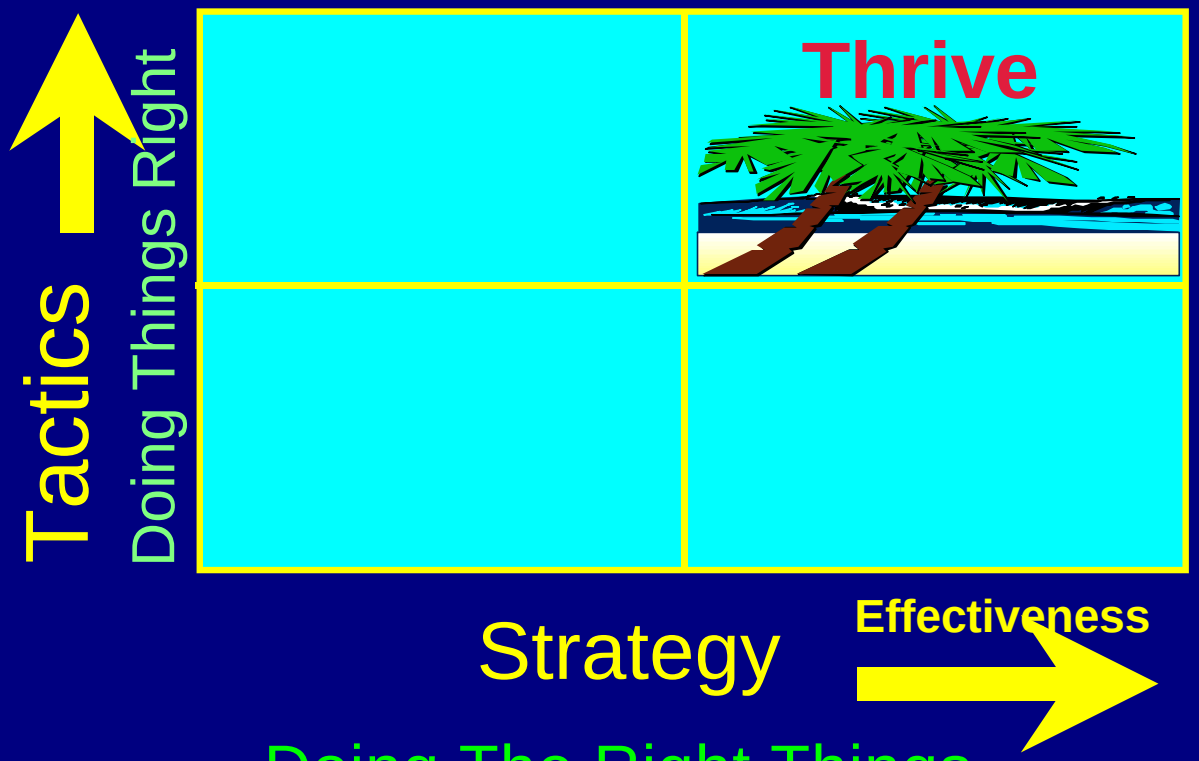

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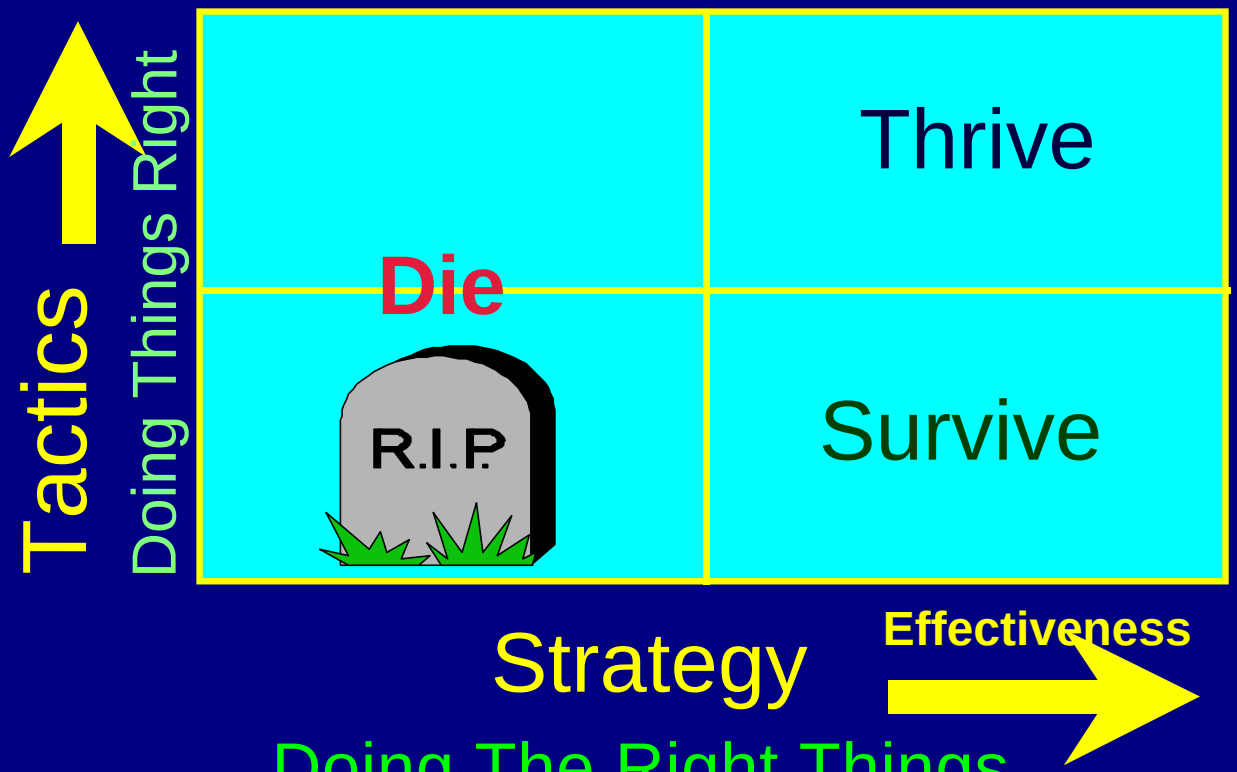

STRATEGY vs TACTICS : A DEFINITION

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STRATEGY vs TACTICS : A DEFINITION

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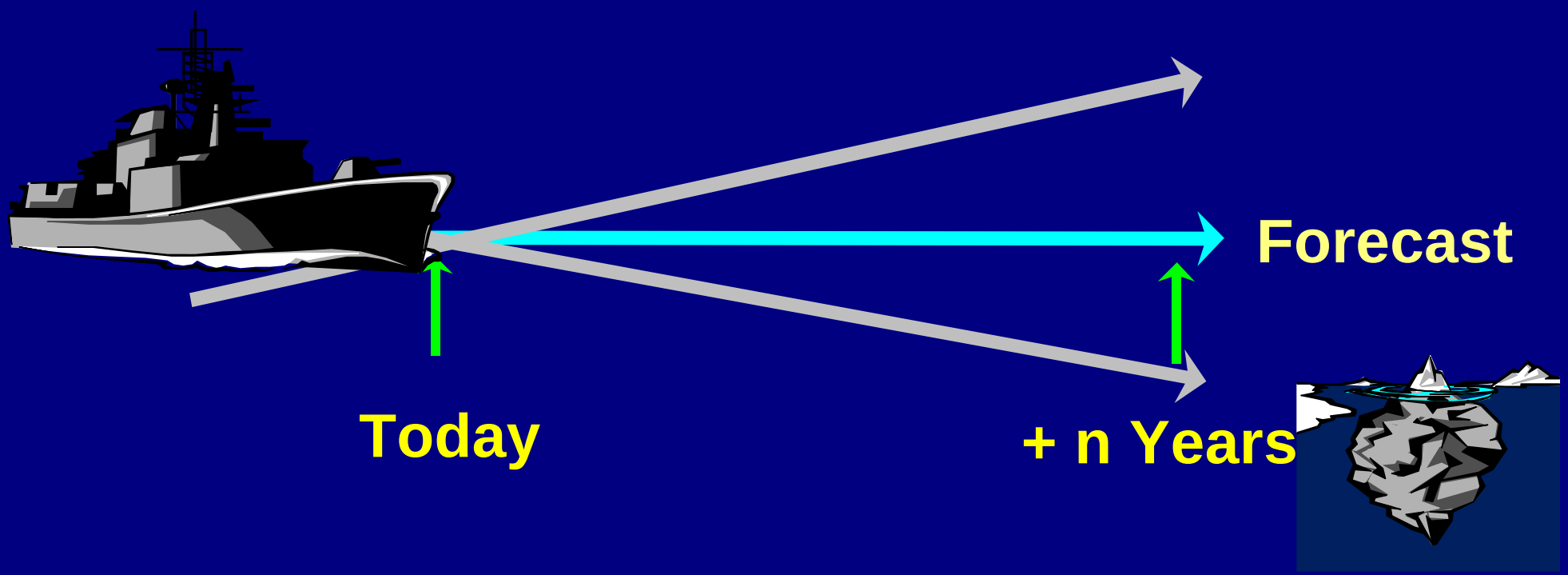
THE TIME DEPENDENCY OF STRATEGY

Professor Malcolm McDonald

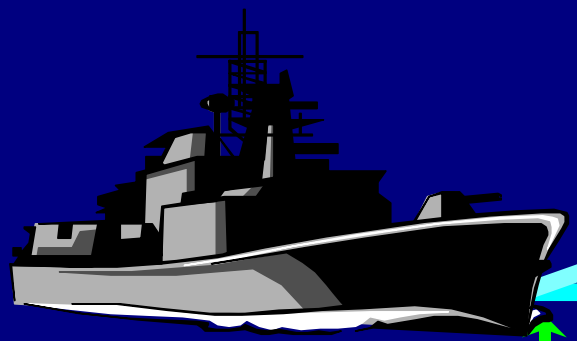
NOT A FORECAST



THE TIME DEPENDENCY OF STRATEGY

Professor Malcolm McDonald

NOT AN OBJECTIVE



Objective

Forecast

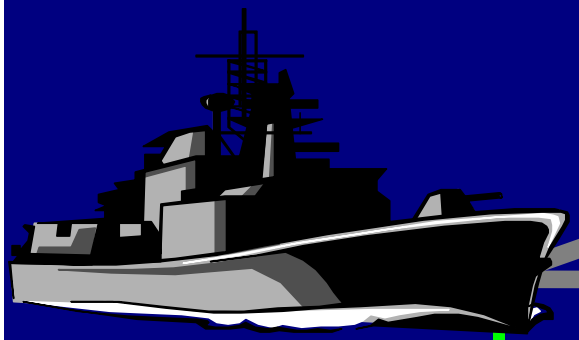
Today

+ n Years

THE TIME DEPENDENCY OF STRATEGY

Professor Malcolm McDonald

STRATEGIC PLAN =
THE PATH TO COMPETITIVE ADVANTAGE



Objective

Strategic Plan

Forecast

Today

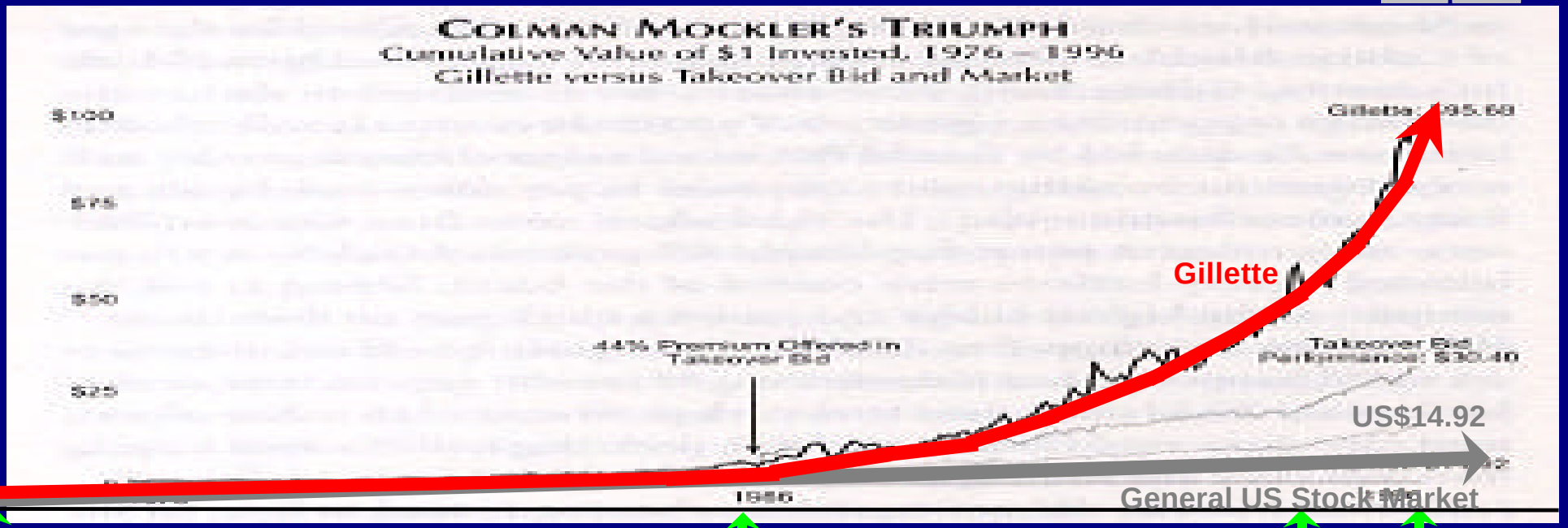
A realistic trajectory of continuous improvement within business constraints

+ n Years

Fundamentally an exponential curve

FROM GOOD TO GREAT

THE EXPONENTIAL TRAJECTORY OF GOOD TO GREAT



1975
Colman Mockler Appointed CEO

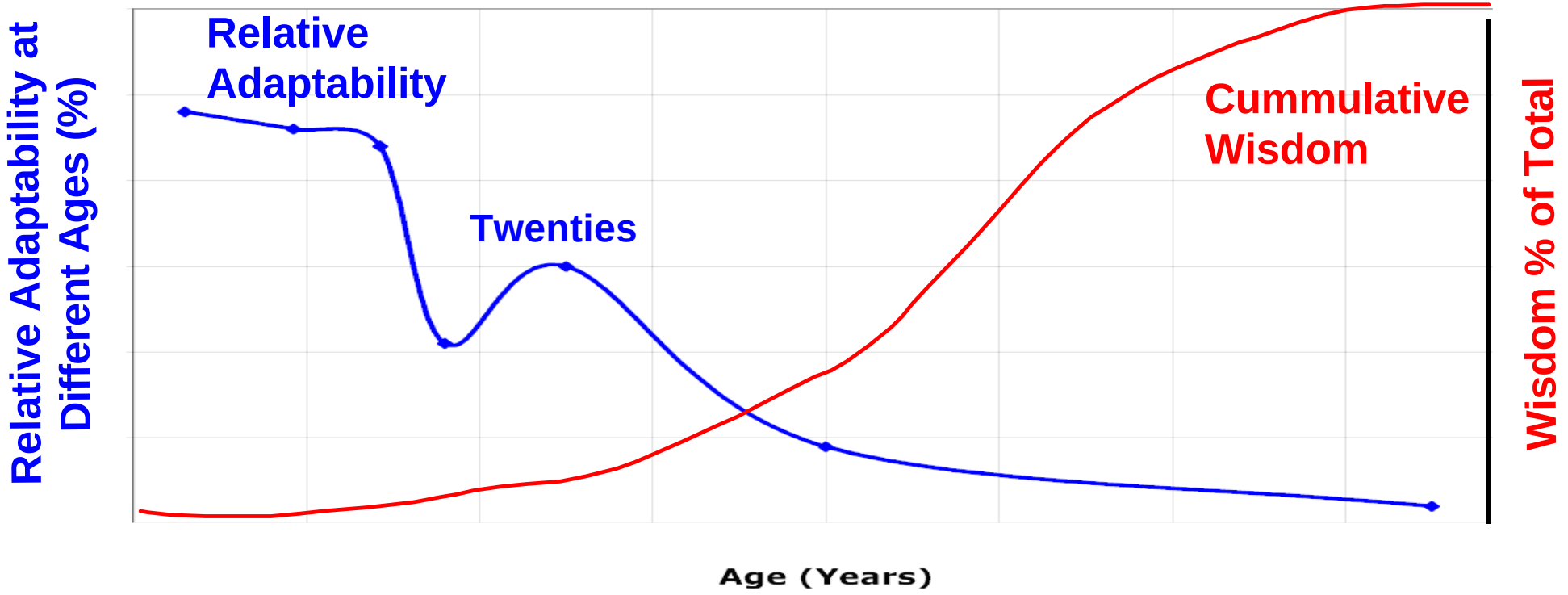
1986
Hostile takeover thwarted

1991
Mockler retires

1996
End Study

PEOPLE / SOFT ISSUES

Human Adaptability and Wisdom



FROM GOOD TO GREAT

THE EXPONENTIAL TRAJECTORY OF EFFECTIVE ENGINEERS

- Shaped -- first five years
- Developed -- next fifteen
- Moulded and matured -- next twenty
- Lead large projects -- forty plus years
- Required engineer demographics -- sixty plus years

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SOUTH AFRICA

ENGINEERING TO THRIVE

What is the relevance?

What do we build the future on?

The HUMAN FOUNDATION

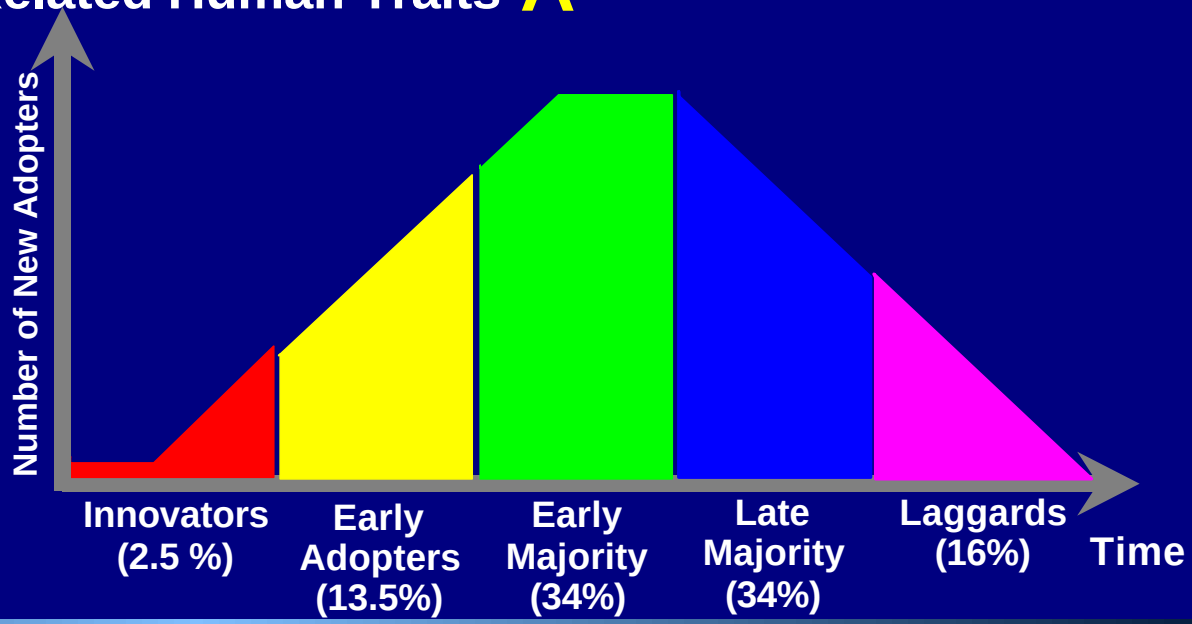
MANAGING FOR SUCCESS

CRITICAL HUMAN FOUNDATION

1. Business Competence (Knowledge and Experience)
2. Technology Competence (Knowledge and Experience)

Paradigms, culture, generations, history ...

3. Personality Profiles and Related Human Traits
4. Solution Knowledge
5. Solution Experience
6. Communication
7. Other Human Factors



PEOPLE / SOFT ISSUES

Personality Style / Psychometric Profile

RELATIONSHIP

"John is a good friend and if he says so that is good enough for me!!"

INNOVATOR

"If it's been done that way before there must be a better way!!!"

"I like things just the way they are!!!"

ADMINISTRATOR / BUREAUCRAT

"I want it done now and I don't care who gets hurt in the process!!!"

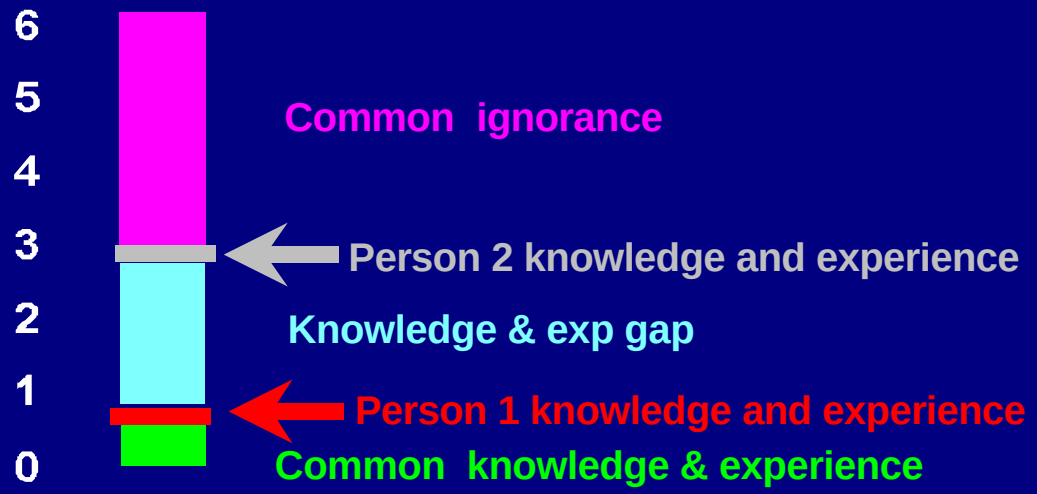
RESULTS

after Jung

PEOPLE / SOFT ISSUES

Competence = Knowledge and Experience

6 = Considerable knowledge and experience, ability to train others



0 = No knowledge or experience

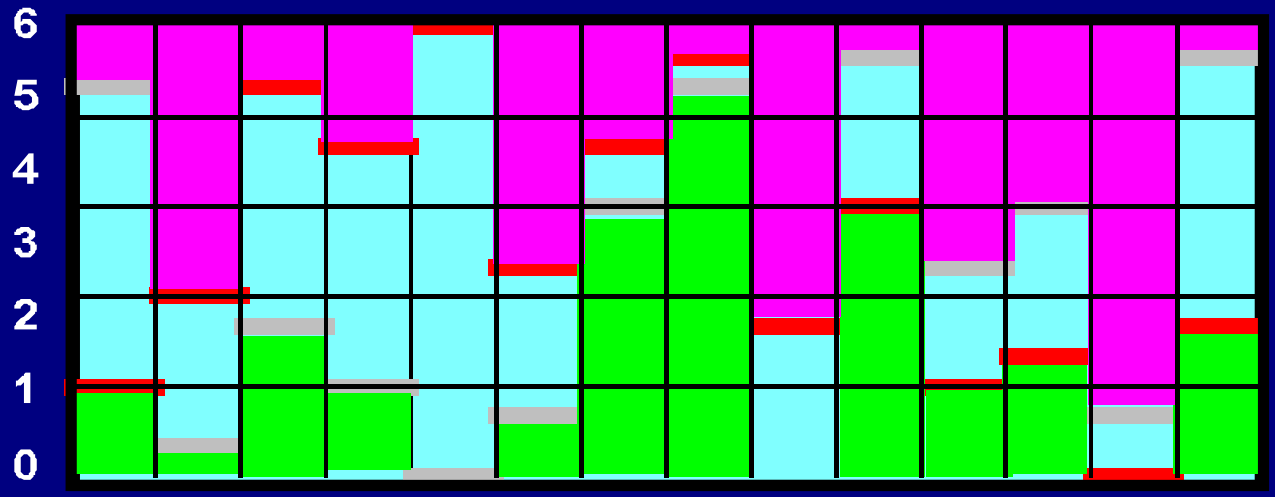
Gap > 1.0 = Communication problem

Gap < 0.7 = Hierarchy problem

refer McPhee : Job Analysis and Competence Evaluation

PEOPLE / SOFT ISSUES

Competence = Knowledge and Experience



Every human being is a unique and complex compilation of knowledge and experience

Every job requires a specific compilation of knowledge and experience

Assembling project teams is a challenge

PARADIGMS

A mental model of the world -- knowledge and experience

Common themes if common background
BUT
Radically different and even conflicting themes if different background

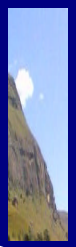
Paradigms are neither good nor bad they are JUST DIFFERENT

Understand them in a calm, objective and non-threatening way

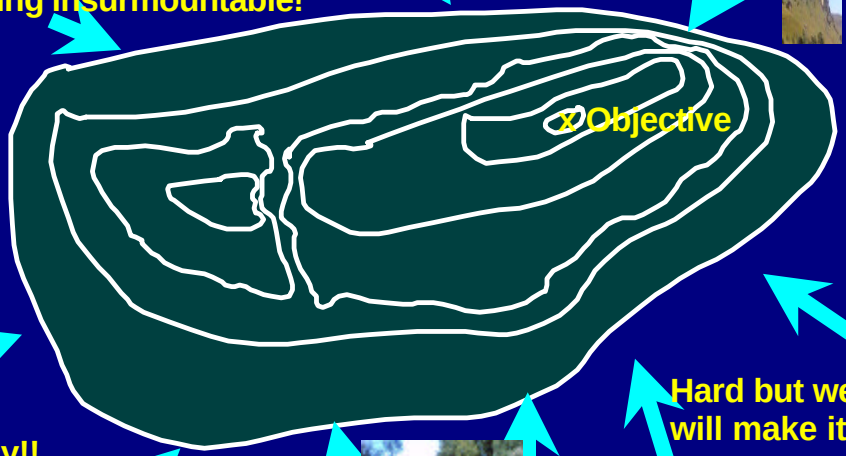
and build bridges

PARADIGMS
THE DIFFERENT VIEWS OF THE MOUNTAIN

Impossible!!

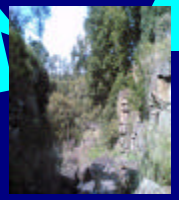


A few challenges but
nothing insurmountable!



Easy!!

Hard but we
will make it!



What a deep gorge!

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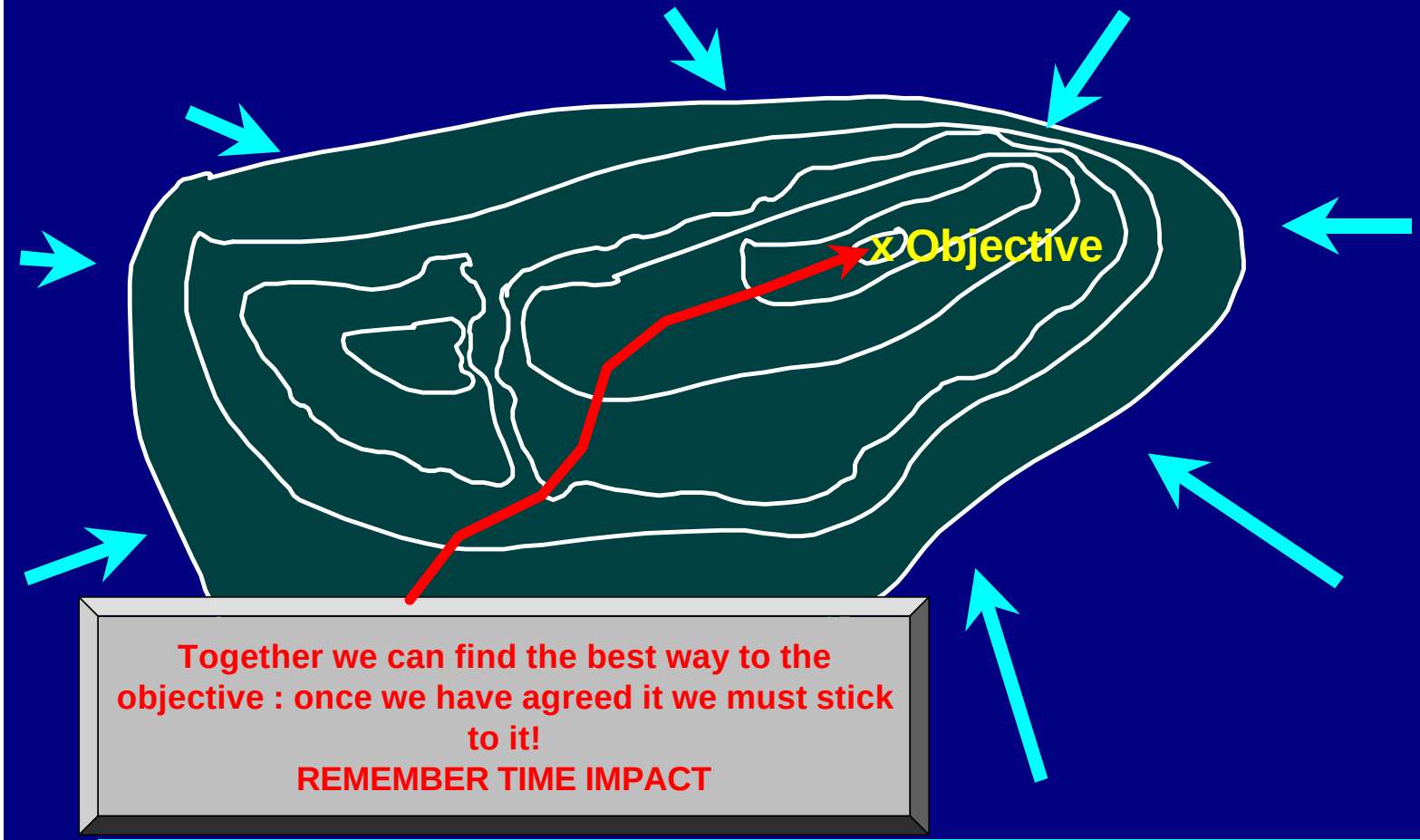
FACTOR WEIGHTING SHARES THE DIFFERENT VIEWS OF THE MOUNTAIN



Reality:

Each person has a unique view

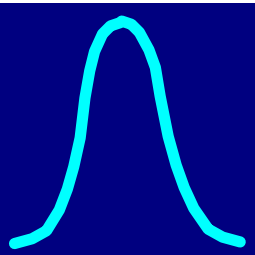
It is desirable to choose ONE view for designing the solution

FACTOR SCORING :
SOME DESCRIPTORS TO AID YOUR CHOICE

0 = Abysmal - could not be worse anywhere in the world
1 = Extremely weak
2 = Very weak
3 = Weak
4 = Mediocre
5 = Average - could be better / could be worse
6 = Acceptable
7 = Strong
8 = Very strong
9 = Extremely strong
10 = Exceptional - could not be better anywhere in the world

Continued /...

FACTOR SCORING
(A BROAD INTERPRETATION)



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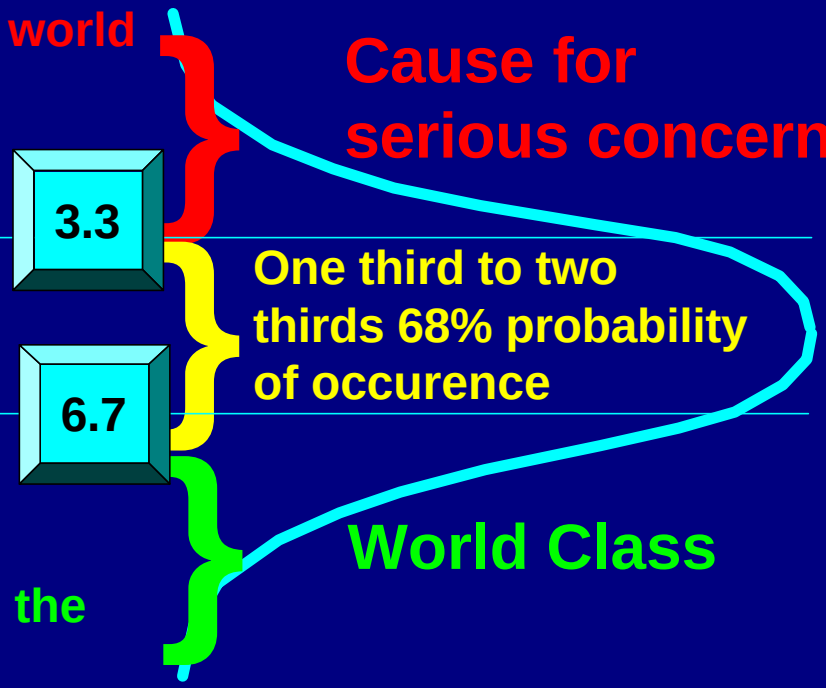
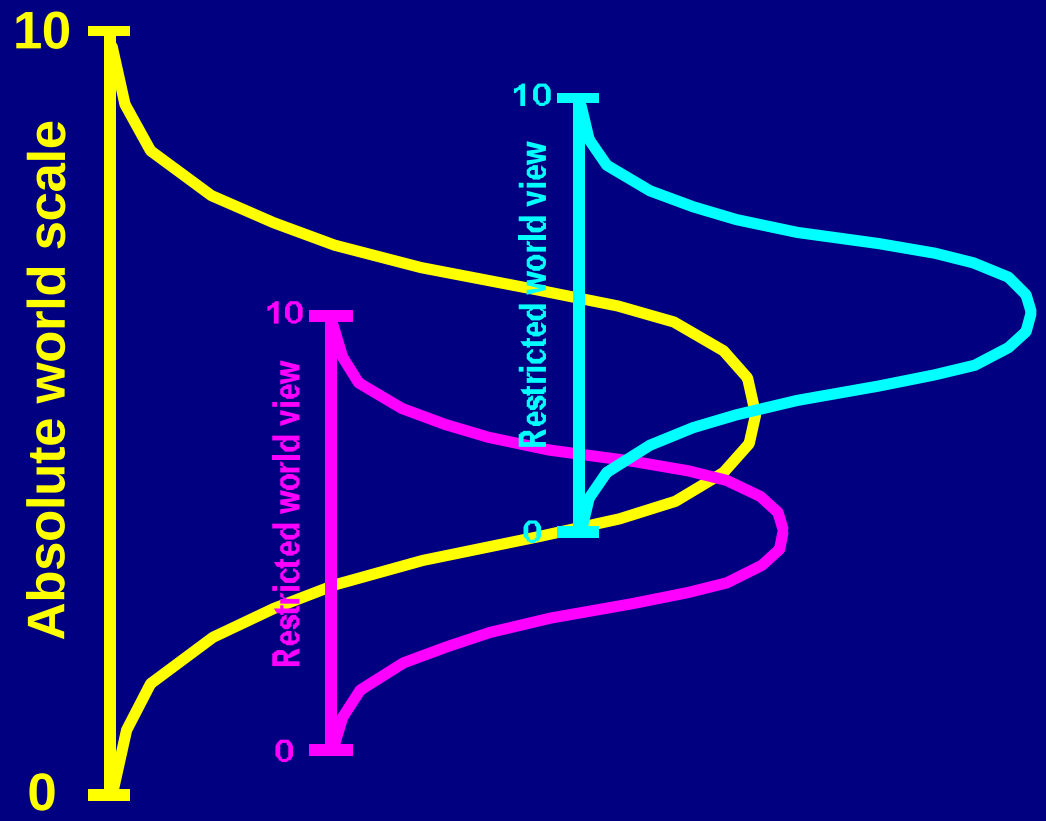


Decimal values (fractions) such as "4.7" can be used if required

Continued /...

THE CHALLENGE OF YOUR PARADIGM
WHAT DO YOU NOT KNOW



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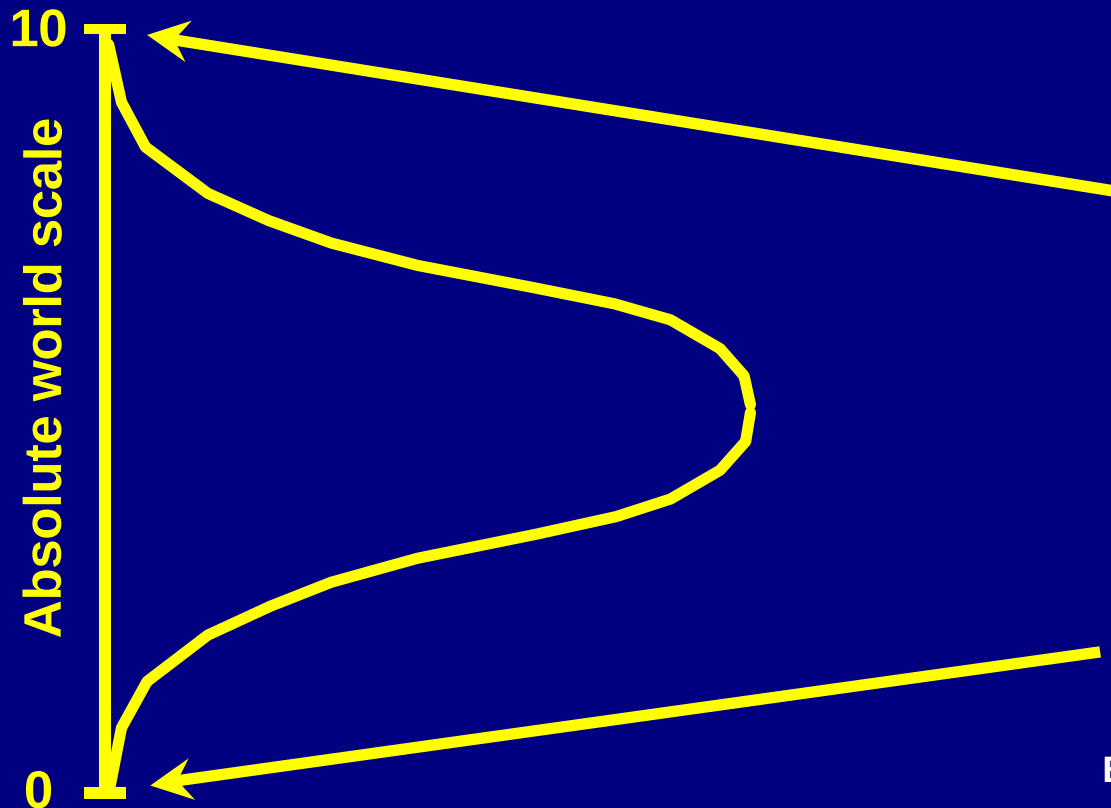
THE CHALLENGE OF YOUR PARADIGM
MOUNTAINS

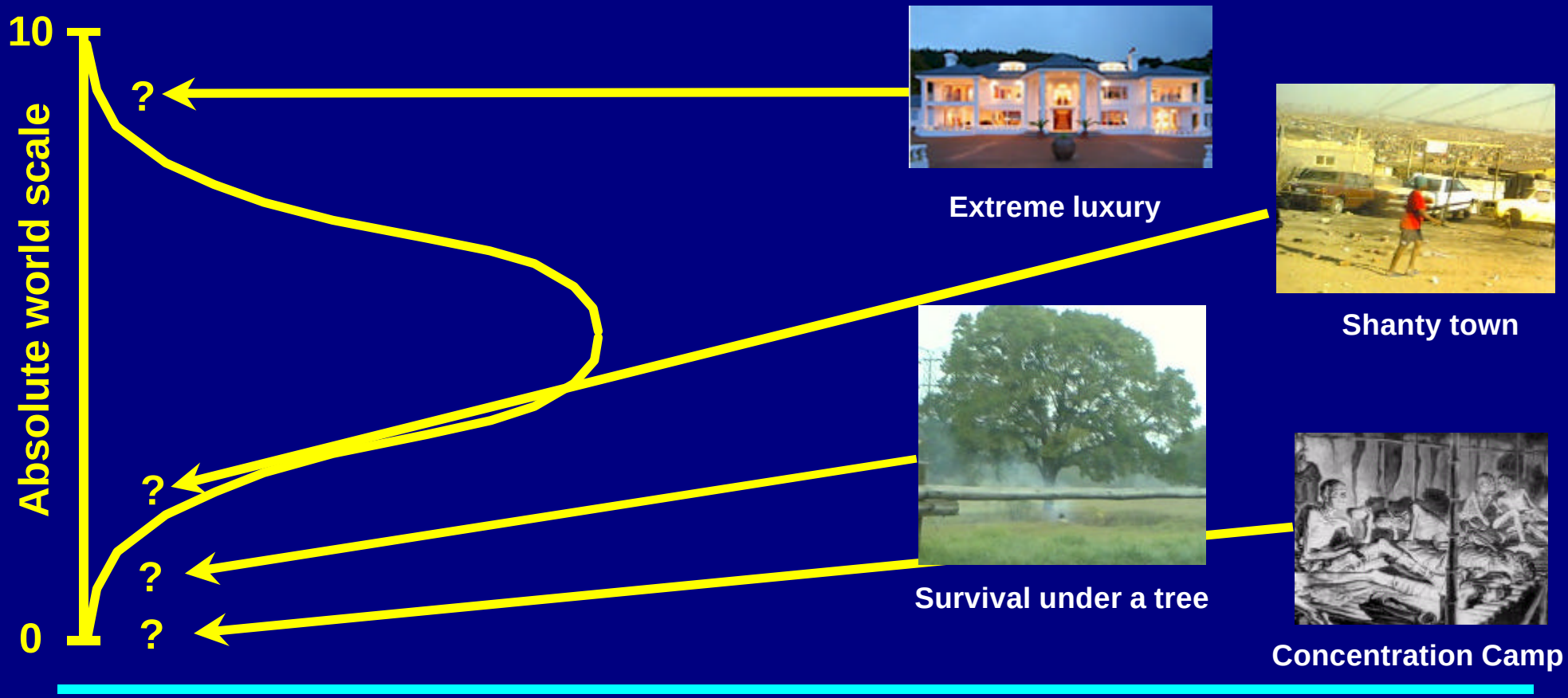


Mount Everest -- highest mountain in the world

Bowling Green -- absolutely FLAT -- ZERO SLOPE

Continued /...

THE CHALLENGE OF YOUR PARADIGM
LIVING CONDITIONS



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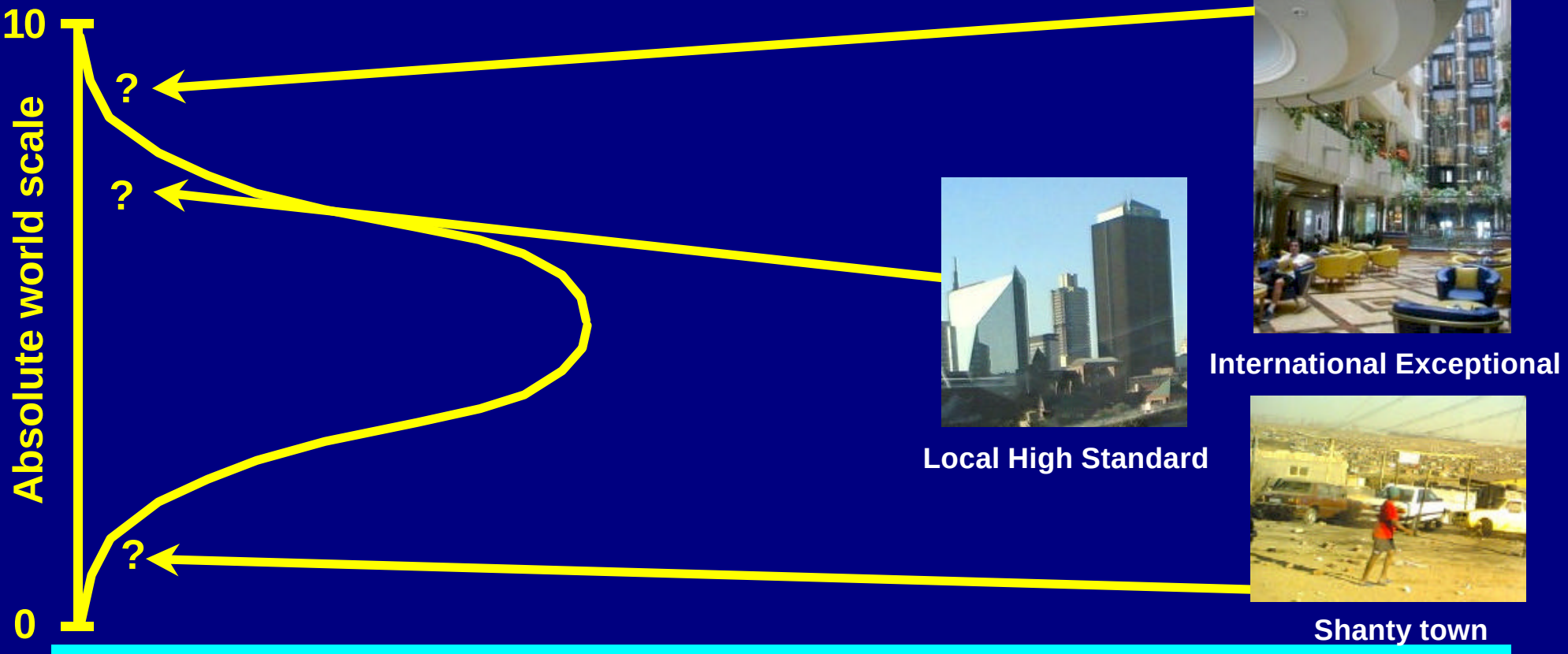
THE CHALLENGE OF YOUR PARADIGM
BUSINESS STANDARDS



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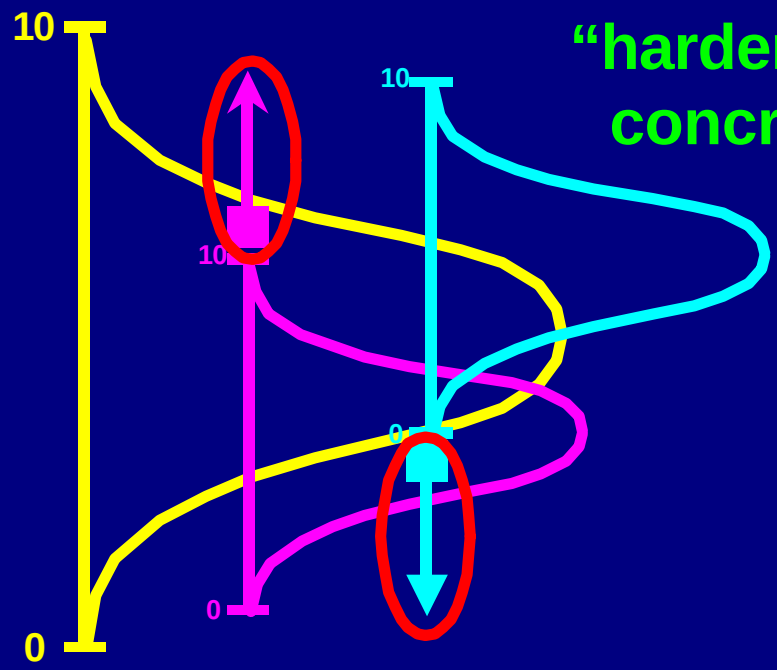
STRETCH YOUR WORLDVIEW WHILE SCORING

- Experience
- Education
- Culture
- Generations -- baby* boomers, X, Y, etc
- History -- World War II?*
- Always had jet planes*
- etc

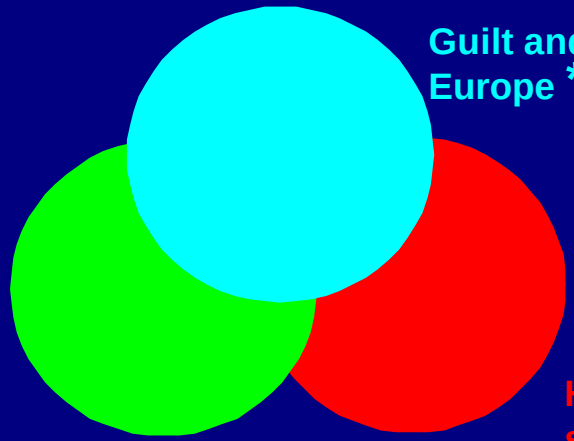
* Dr Graeme Codrington



This is real -- "harder than concrete"

INTER CULTURAL INTELLIGENCE

Three Colors of Worldview*



Guilt and Innocence -- North America and Europe *

Power and Fear -- Some of Africa, Asia, some of South America*

Honor and Shame -- Asia, Middle East, some of South America*

*KnowledgeWorkx -- Marco Blankenburgh

INTER CULTURAL INTELLIGENCE

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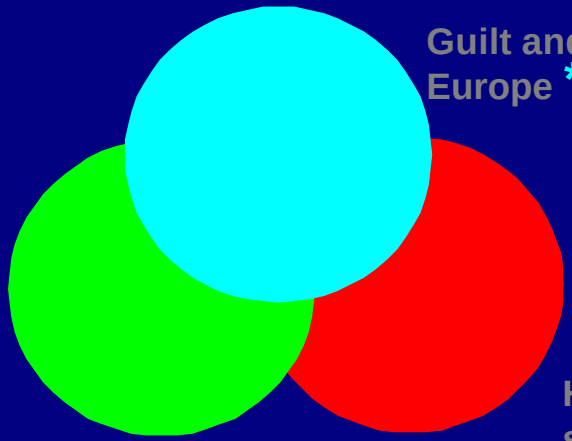

Power and Fear -- Some of Africa, Asia, some of South America*

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None of these are RIGHT or WRONG, they are a dimension of paradigms -- just DIFFERENT

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INTER CULTURAL INTELLIGENCE

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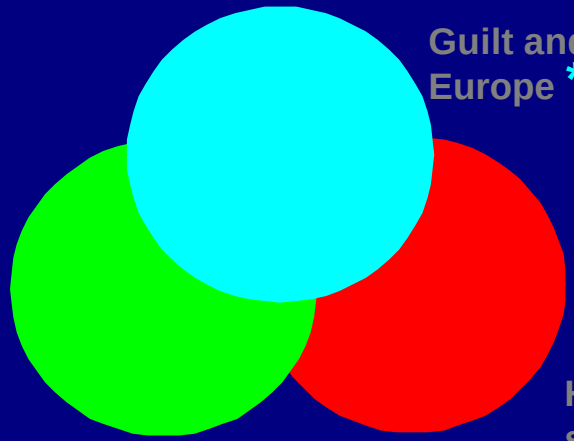

Guilt and Innocence -- North America and Europe *

(Success and failure -- the dominant view of engineering)

Power and Fear -- Some of Africa, Asia, some of South America*

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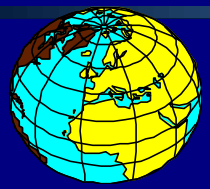


SOUTH AFRICA

ENGINEERING TO THRIVE

"I.T. is the next corporate disaster waiting to happen”

SOUTH AFRICA

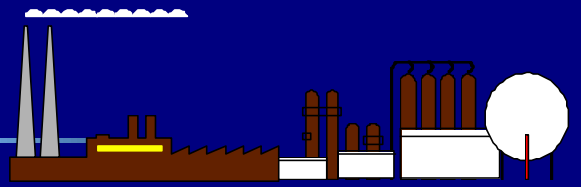
ENGINEERING TO THRIVE

What is the relevance?

What do engineers know that most people do NOT know?

SOUTH AFRICA

ENGINEERING TO THRIVE



SOUTH AFRICA

ENGINEERING TO THRIVE

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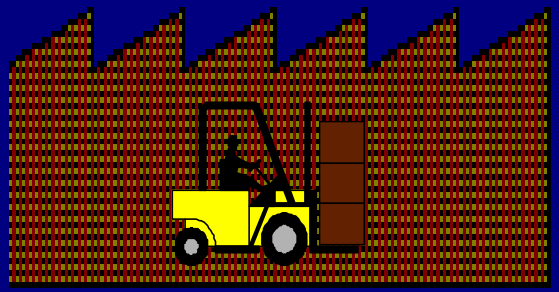
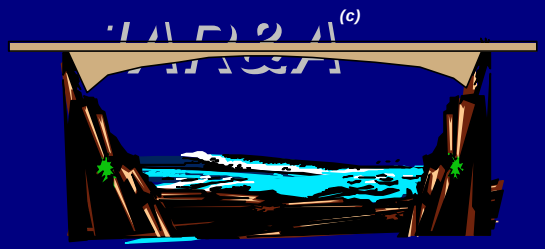
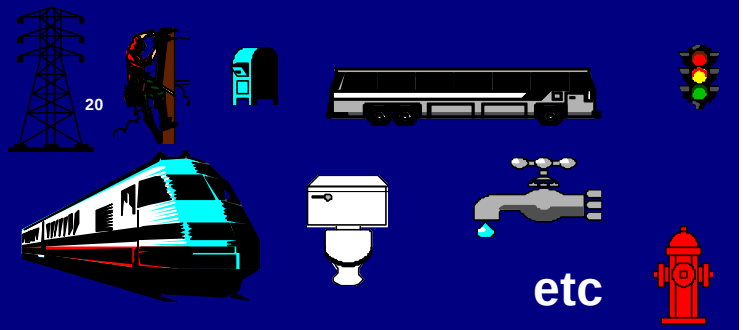
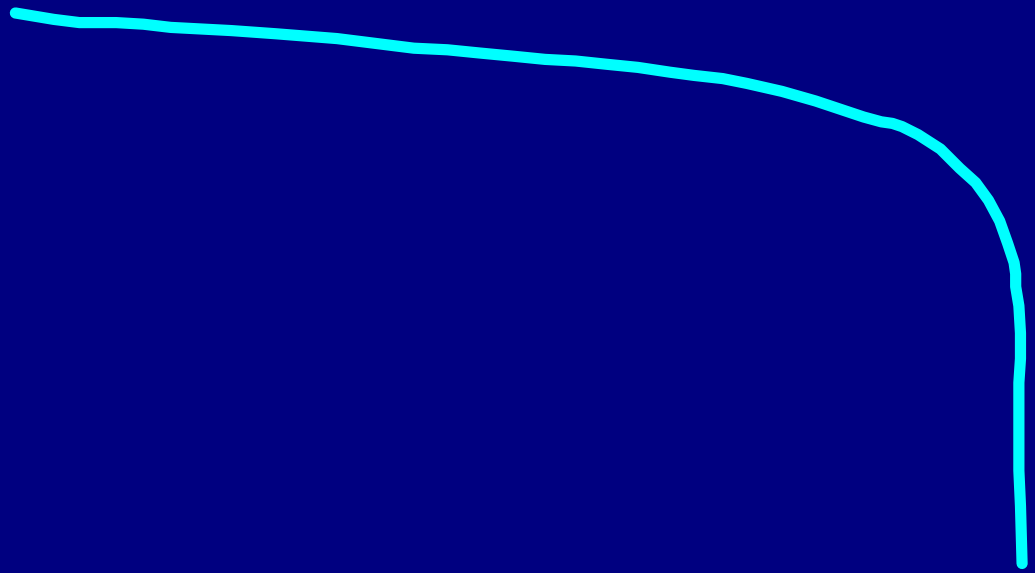






Exponential decay in life generally and engineering systems in particular



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ENGINEERING TO THRIVE

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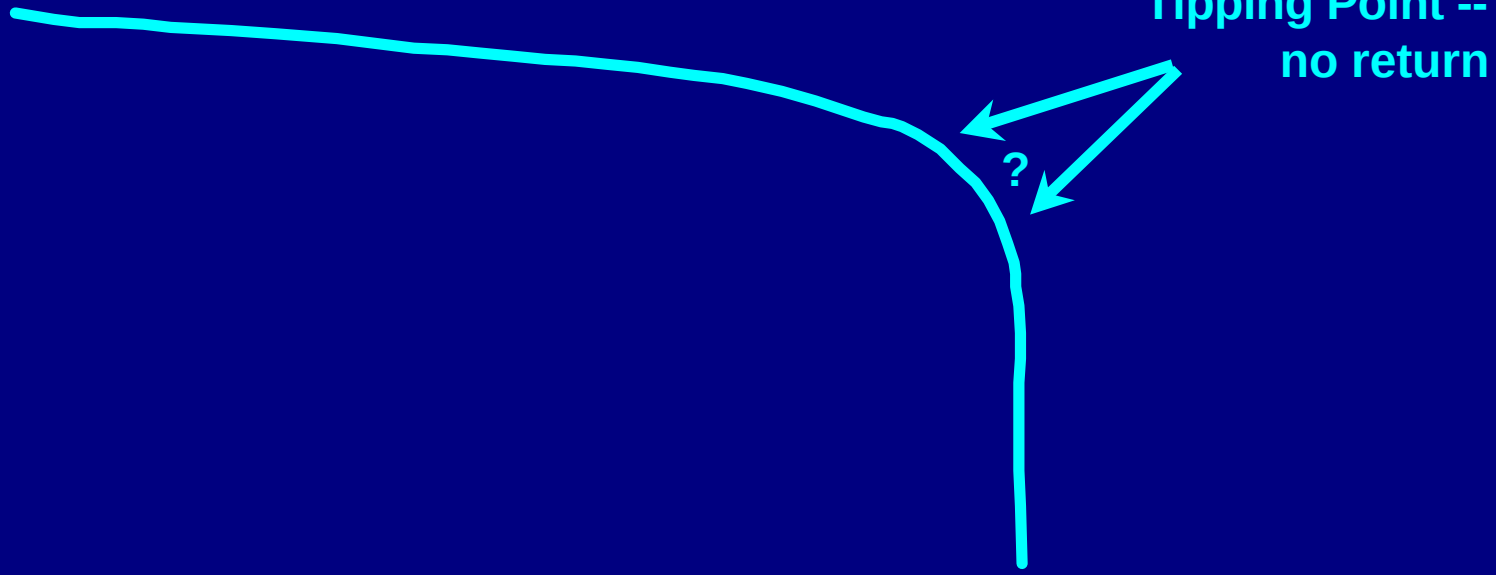
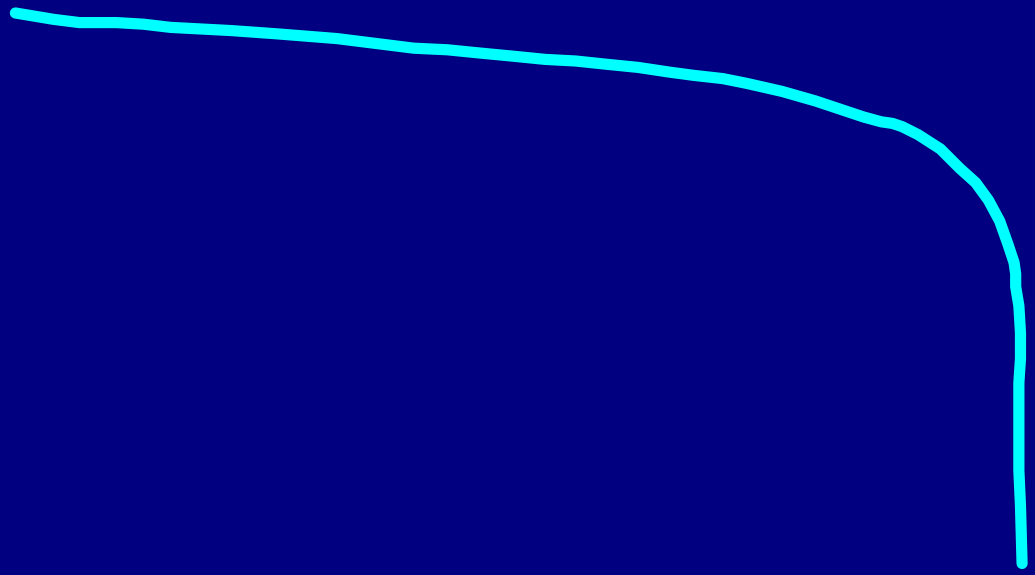


SOUTH AFRICA

ENGINEERING TO THRIVE

South African core infrastructure -- the infrastructure necessary for the economy to thrive sustainably for ALL South Africans



SOUTH AFRICA

ENGINEERING TO THRIVE

South African core infrastructure -- the infrastructure necessary for the economy to thrive sustainably for ALL South Africans

- Routine power failure
- Failure of roads, sewerage, etc ...
- Exodus of mature engineers
- China and India and ... booming
- The global economy is NOT fault tolerant

Lo Road

SOUTH AFRICA

ENGINEERING TO THRIVE

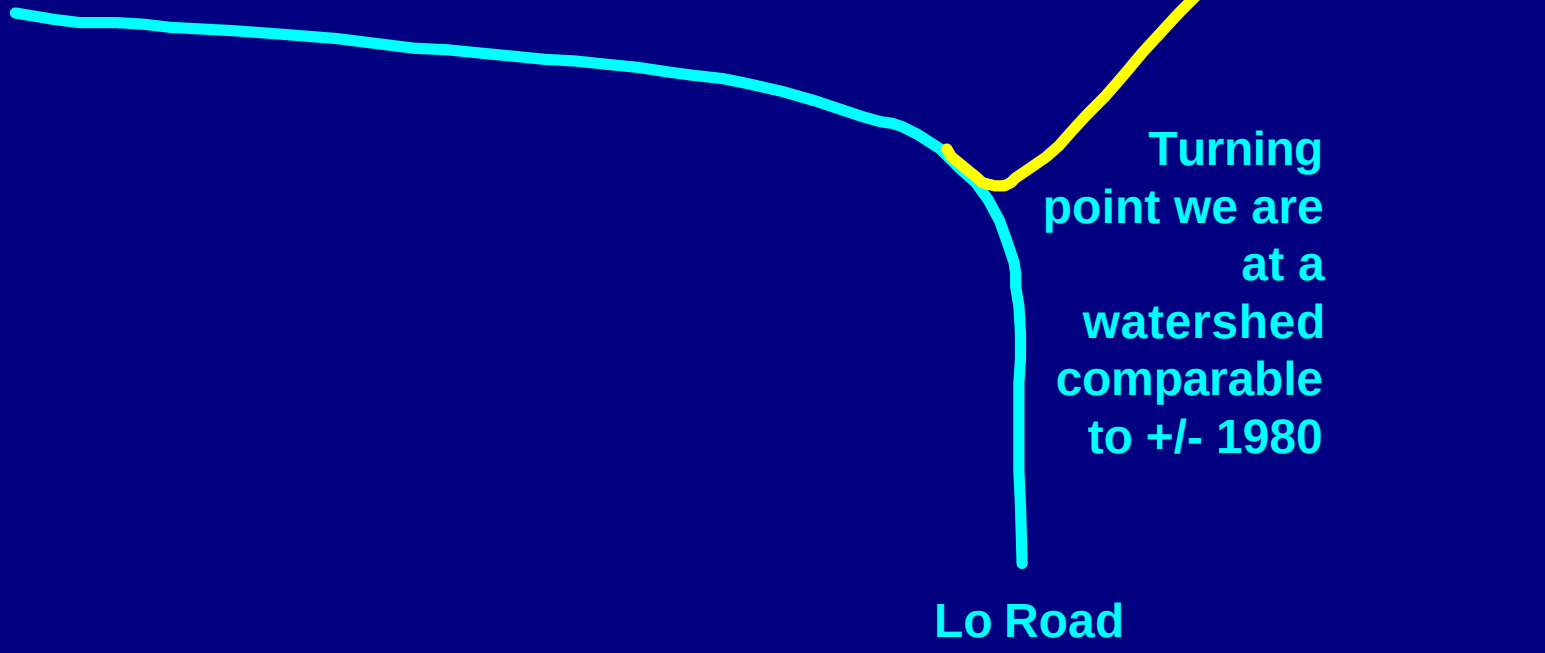
South African core infrastructure -- the infrastructure necessary for the economy to thrive sustainably for ALL South Africans

- Sustainable appropriate power supply
- Roads, sewerage, etc sustainably maintained
- Reclaim and develop mature engineers
- China and India and SOUTH AFRICA booming
- The global economy is rewards winners

SOUTH AFRICA

ENGINEERING TO THRIVE

South African core infrastructure -- the infrastructure necessary for the economy to thrive sustainably for ALL South Africans



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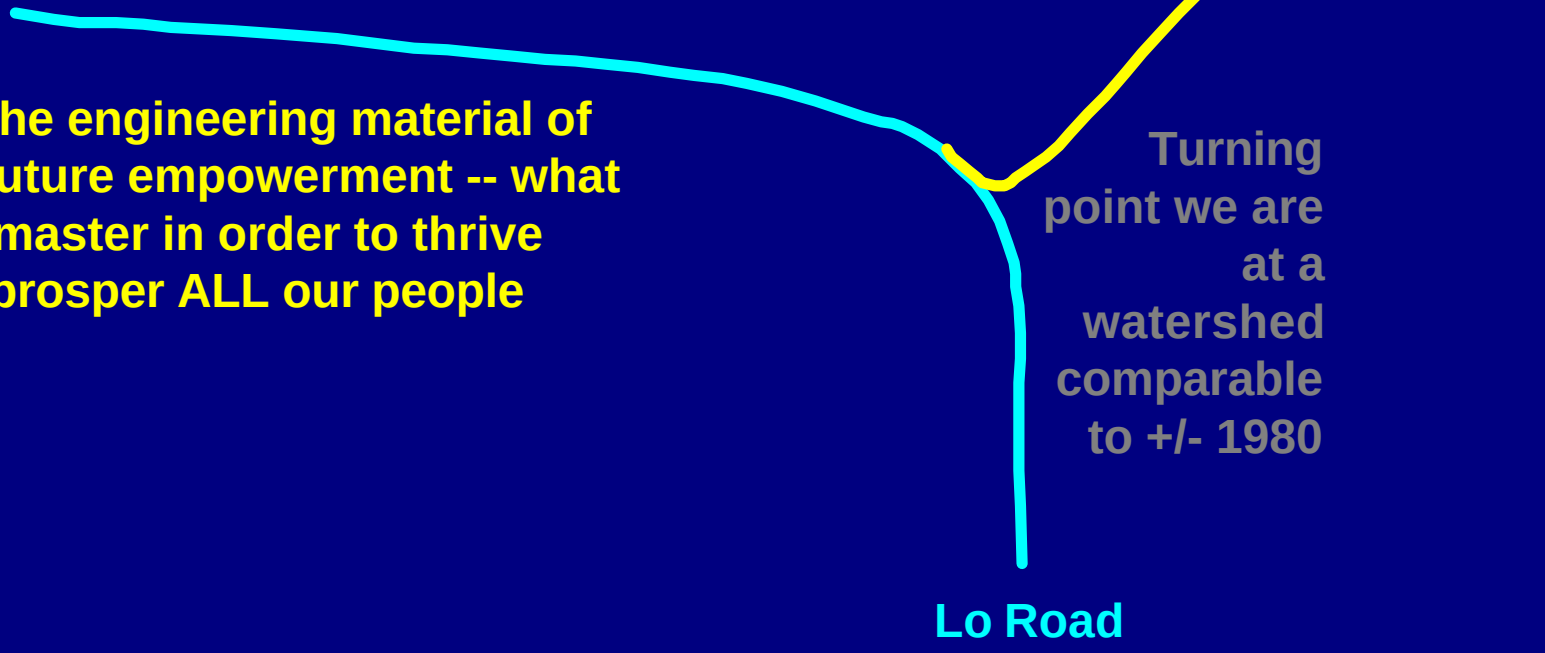


Paradigms -- the engineering material of South Africas future empowerment -- what we need to master in order to thrive enough to prosper ALL our people

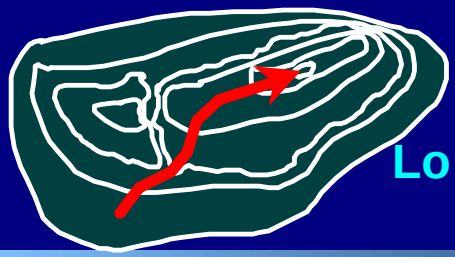
SOUTH AFRICA

ENGINEERING TO THRIVE

South African core infrastructure -- the infrastructure necessary for the economy to thrive sustainably for ALL South Africans

Paradigms -- the engineering material of South Africas future empowerment -- what we need to master in order to thrive enough to prosper ALL our people

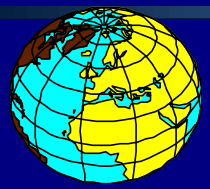
Recognize that we were born to be equal and YET are ALL different and celebrate our difference, understand it and harness it and where it hampers us let us CHOOSE to climb the mountain TOGETHER



Turning point we are at a watershed comparable to +/- 1980

How do WE achieve success?

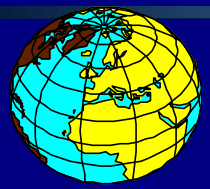
What next?



SOUTH AFRICA

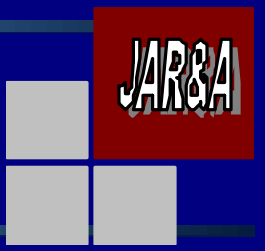
ENGINEERING TO THRIVE

- A pragmatic view of the views of the mountain -- paradigms -- culture, history, generations, etc
- A multi-disciplinary, pragmatic working group to identify the technical issues and develop a solution
- A clear, enrolling, inclusive vision
- Communicators -- print, radio, TV, etc
- Communicate, communicate, communicate and communicate



SOUTH AFRICA

ENGINEERING TO THRIVE



- A pragmatic view of the views of the mountain -- paradigms -- culture, history, generation, etc
- A multi-disciplinary, pragmatic working group to identify the technical issues and develop a solution
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And ...
Remember ...
Technology I.T. is ALL
about PEOPLE!

ACKNOWLEDGEMENTS AND DEDICATION

I would like to acknowledge
the contributions and inputs of all my clients, associates, staff and families without whom the work on which this presentation is based would not have been possible

Particularly my father and mother, Angus and Thelma, whose love and support for all my endeavours made it possible for me to gain this knowledge.

I also acknowledge Fiona and Ingrid for all they contributed and Sandra and Helene for their unreserved love and giving

This presentation is dedicated to
The glory of the Eternal Creator
who is the source and reason for our existence

Psalm 136:5 *"To Him who by wisdom made the heavens, for His mercy endures forever;"*

SOUTH AFRICA

ENGINEERING TO THRIVE

Technology is ALL about PEOPLE!

QUESTIONS ?

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