

TRIZ:

Necessary But Not Sufficient Customers And Theories Of Everything

Darrell Mann



The Innovation Challenge:

...Getting it Right is Hard – the odds are heavily stacked against you: -

- * over 90% of innovations fail before they reach the market**
- * over 90% of those innovations that do reach the market will also fail**
- * Over 90% of innovations are delivered late, over-budget or to a lower quality than was originally planned**
- * Over 90% of collaborative innovations fail**



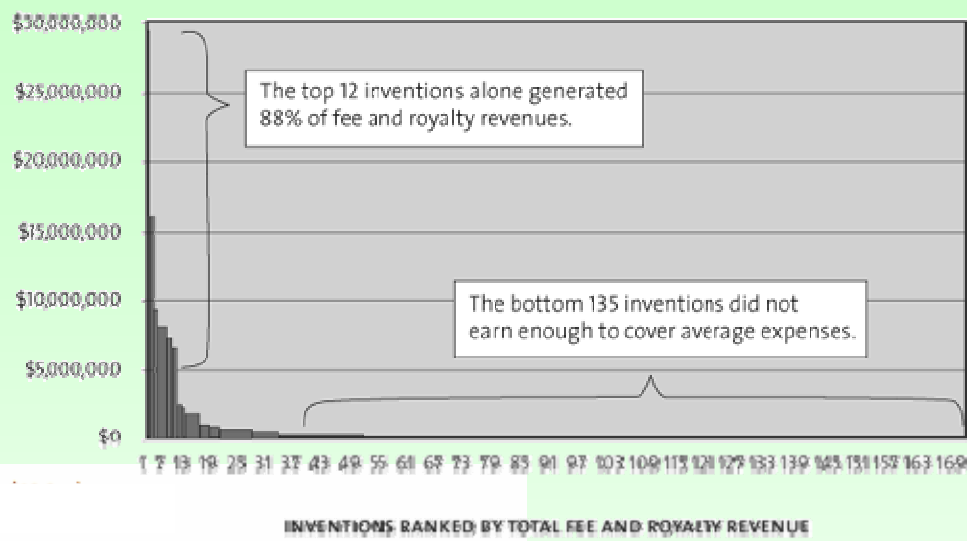
..And If You Thought That Was Bad

Academic research:
every \$100 invested will
on average return
\$3 (gross) in revenue.

As a Global Average.

In the UK the return
would be just over \$1

FIGURE 3: DISTRIBUTION OF TOTAL FEES AND ROYALTIES
EARNED BY THE 174 INCOME-GENERATING AES INVENTIONS (1982-2000)

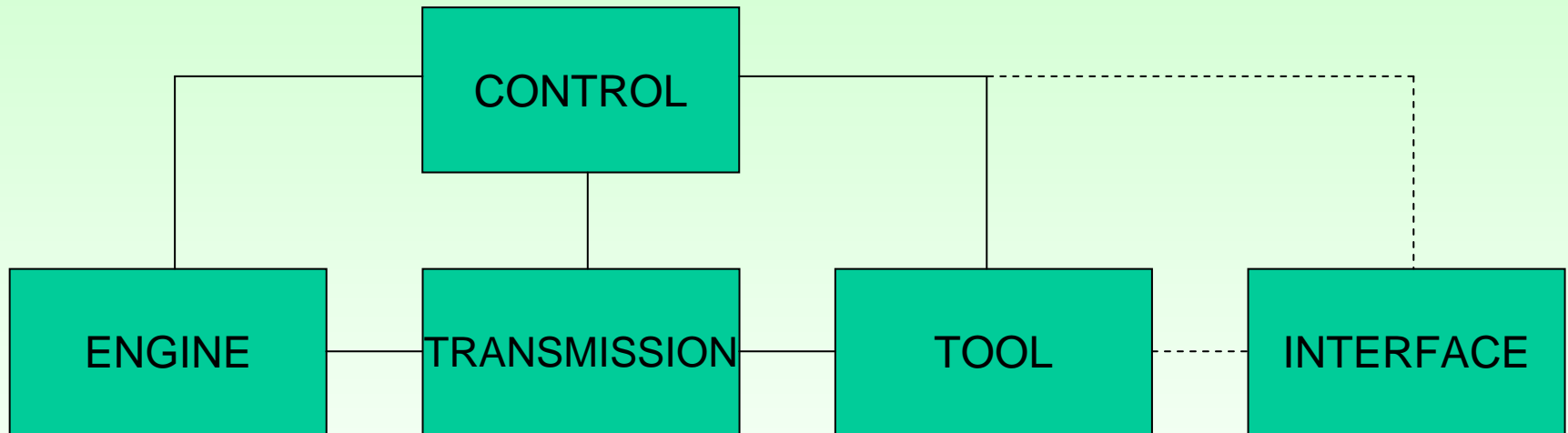


| | U.S.A. | | | CANADA | | | U.K. | | AU STRALIA | |
|--|--------|--------|--------|--------|-------|-------|-------|-------|------------|-------|
| | 2001 | 2002 | 2003 | 2001 | 2002 | 2003 | 2001 | 2002 | 2001 | 2002 |
| Research expenditure (\$b ATRE) | \$27.6 | \$31.7 | \$34.8 | \$2.1 | \$2.5 | \$2.5 | \$2.6 | \$3.1 | \$1.9 | \$2.1 |
| Invention disclosures | 41 | 40 | 39 | 44 | 48 | 50 | 54 | 72 | 28 | 25 |
| Patents, filed | 21 | 21 | 21 | 20 | 17 | 17 | 29 | 35 | 21 | 22 |
| Patents, issued | 12 | 10 | 10 | 8 | 7 | 7 | 11 | 11 | 6 | 6 |
| Licenses, executed | 12 | 12 | 11 | 16 | 15 | 18 | 15 | 21 | 9 | 11 |
| Licenses, active | 83 | - | - | 67 | 70 | - | - | 52 | - | - |
| Licenses, yielding income | 28 | 27 | 26 | - | 30 | 35 | 16 | 20 | - | - |
| Start-up companies, total | 1.8 | 1.1 | 1.0 | 3.2 | 2.0 | 2.3 | 6.7 | 5.1 | 2.4 | 2.1 |
| Start-up companies, still operating | 9.1 | - | - | - | 20.0 | - | - | - | 52 | 52 |
| Staff, professional | 1.9 | 1.9 | 1.9 | 4.2 | 4.6 | 5.5 | 17.7 | 24.3 | 5.8 | 4.8 |
| Staff, support | 2.0 | 2.0 | 1.9 | 4.5 | 5.0 | 5.4 | | | 2.8 | 2.5 |
| Disclosures to: | | | | | | | | | | |
| licenses | 29% | 30% | 28% | 36% | 31% | 35% | 27% | 29% | 33% | 43% |
| start-ups | 4% | 3% | 3% | 7% | 4% | 5% | 12% | 7% | 9% | 9% |
| licenses + start-ups | 34% | 32% | 31% | 43% | 35% | 39% | 40% | 36% | 41% | 51% |
| License income | 3.0% | 3.0% | 2.8% | 2.6% | 1.3% | 1.6% | 1.0% | 1.1% | 1.8% | 1.4% |
| Legal expenses as % total res exp ^a | 0.3 % | 0.3% | 0.5% | 0.2% | 0.2% | 0.3% | 0.5% | 0.5% | 0.2% | 0.2% |
| Legal expenses as % of licence income ^b | 10% | 10% | 18% | 6% | 13% | 19% | 51% | 48% | 9% | 12% |

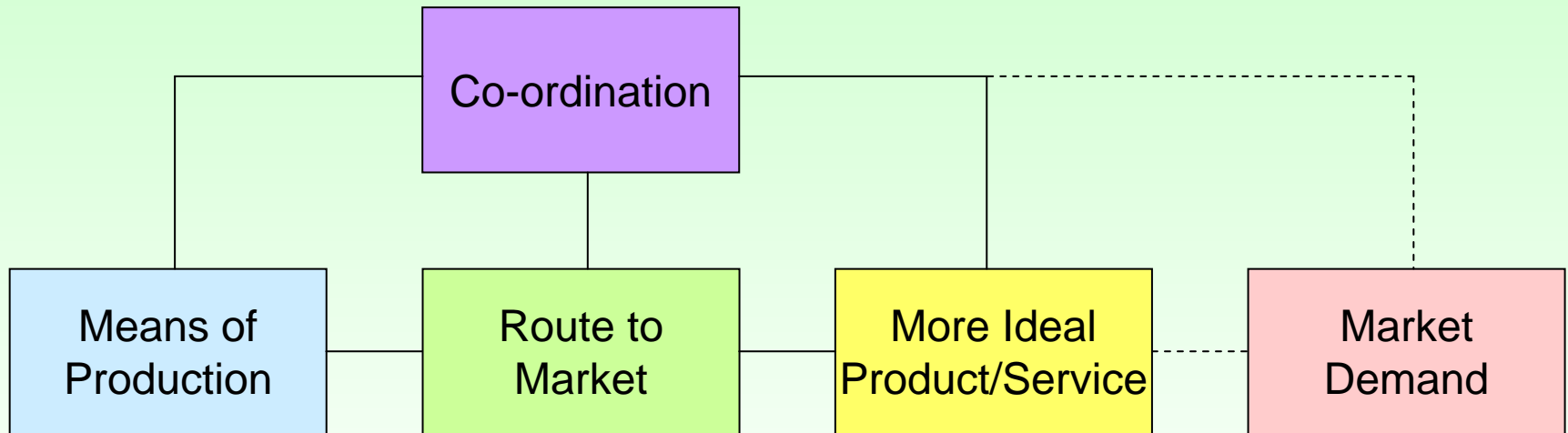


Where & Why Do Innovations Fail?

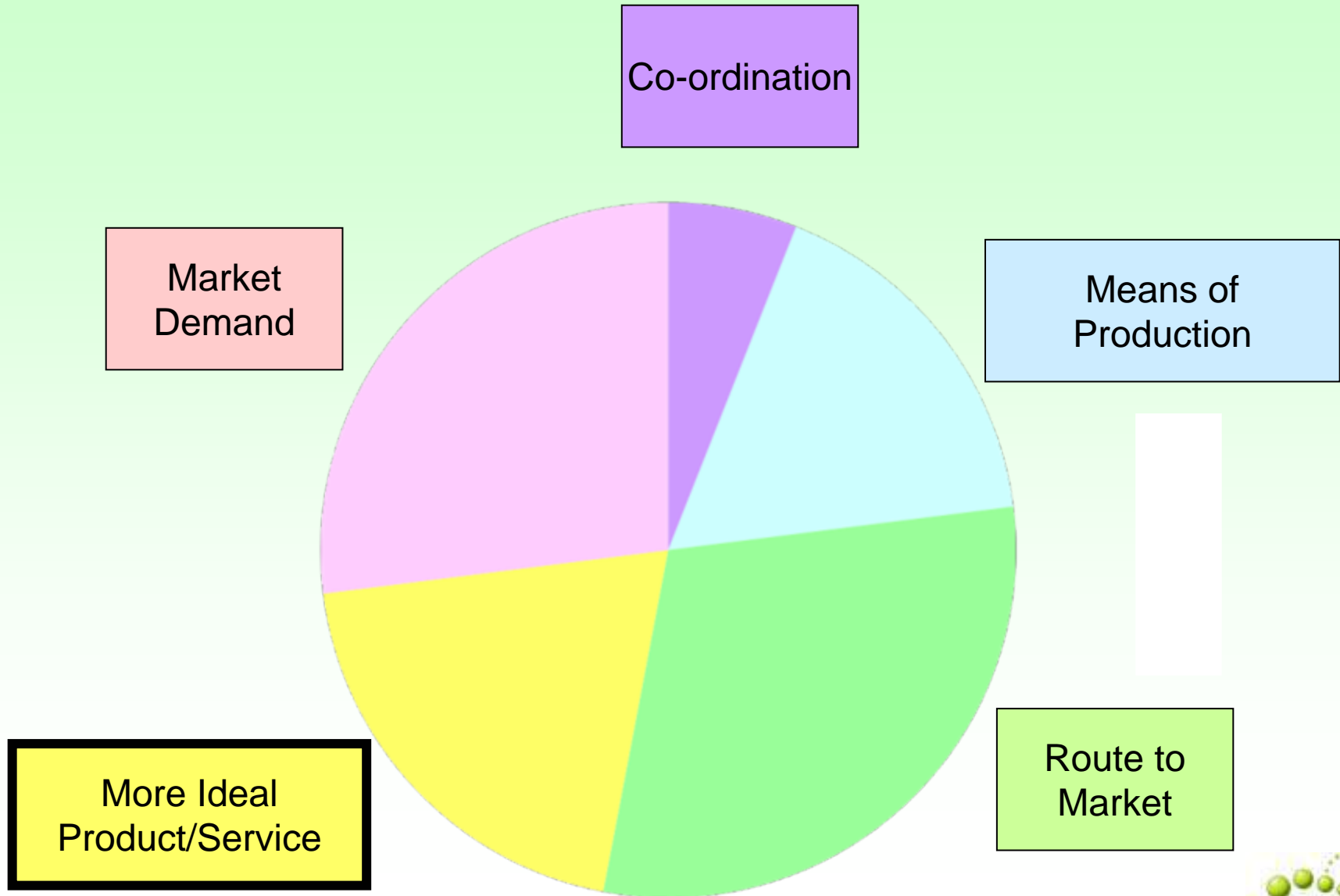
- Law Of System Completeness



Law Of System Completeness - Business



Where Failures Happen



(The technical solution is < 20% of the problem)



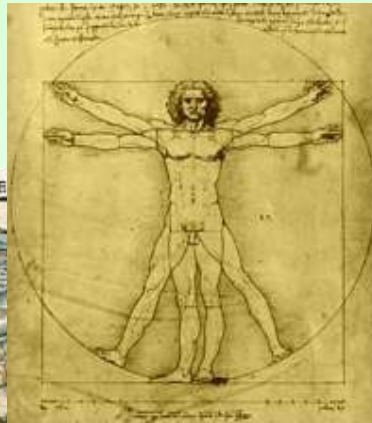
Theories Of Everything



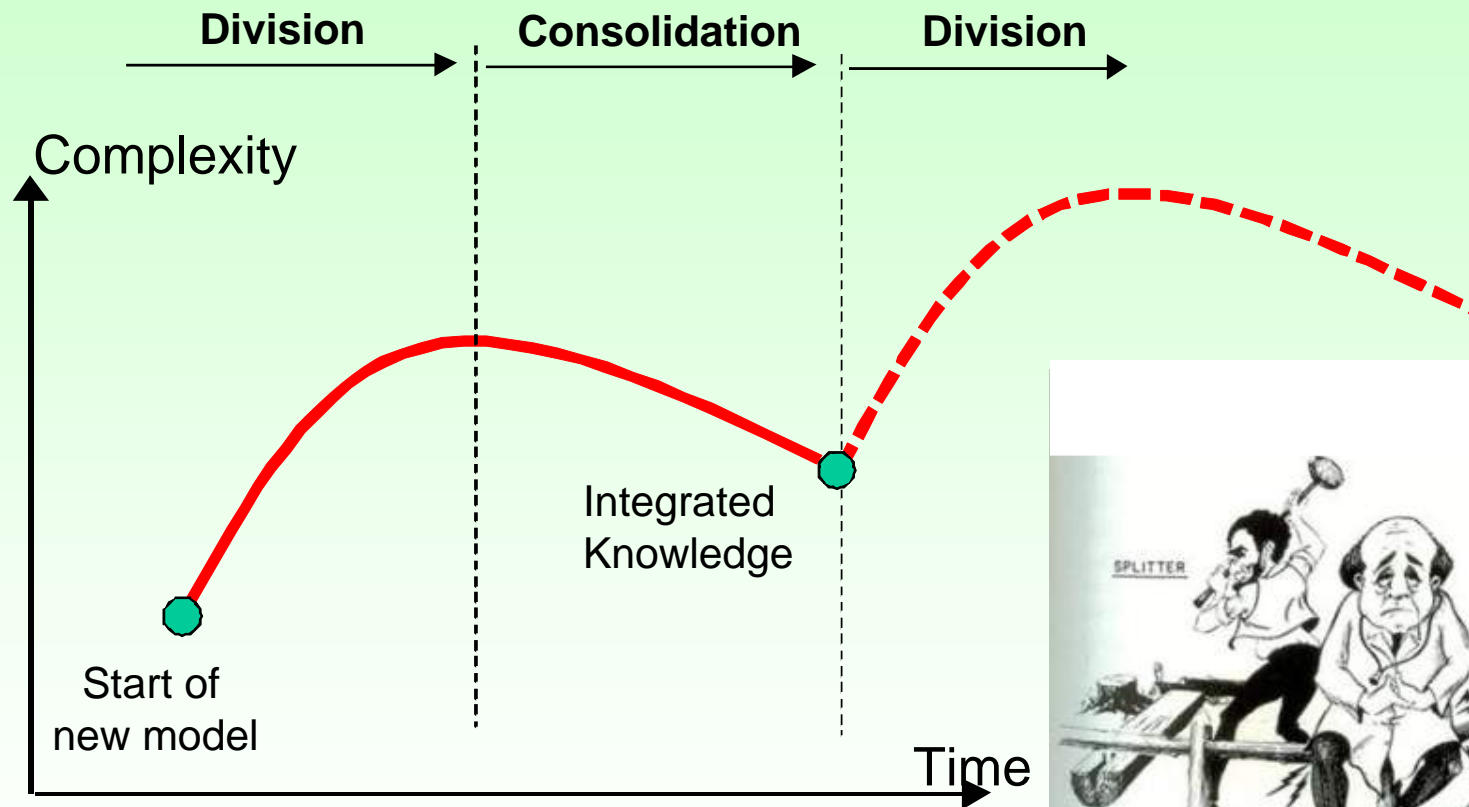
~2500 years ago



~500 years ago

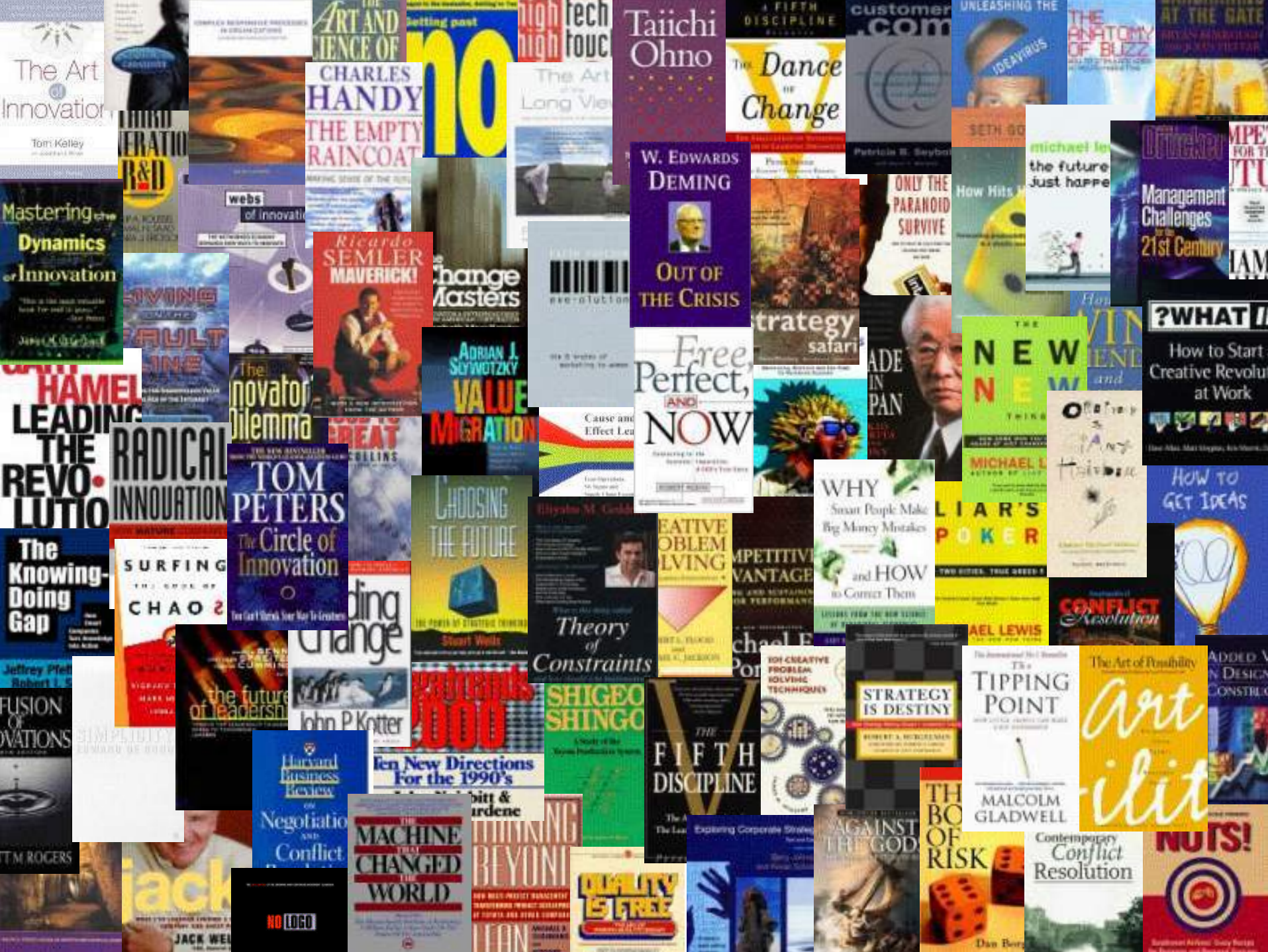


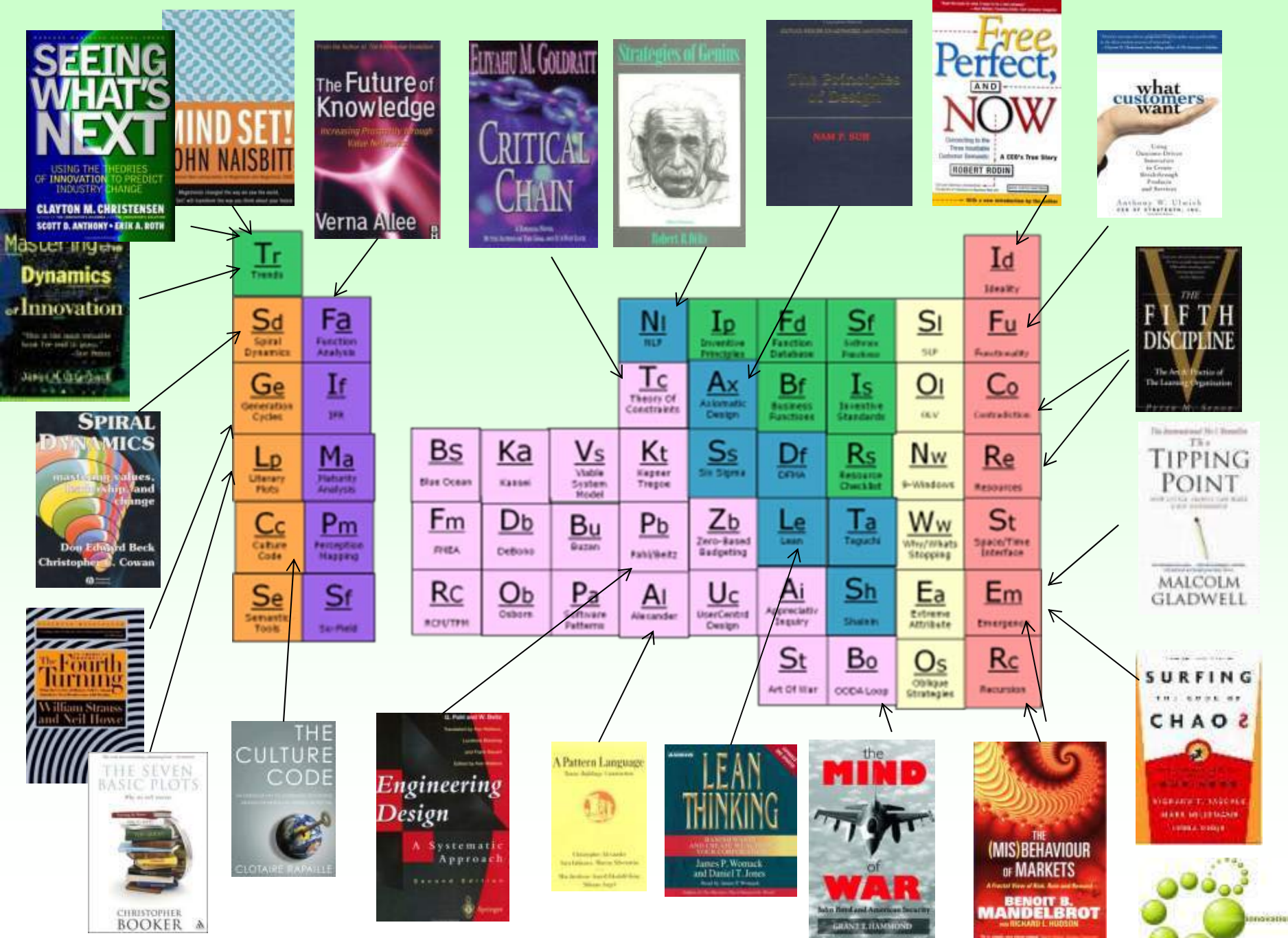
Theories Of Everything



Death By A Million Tools

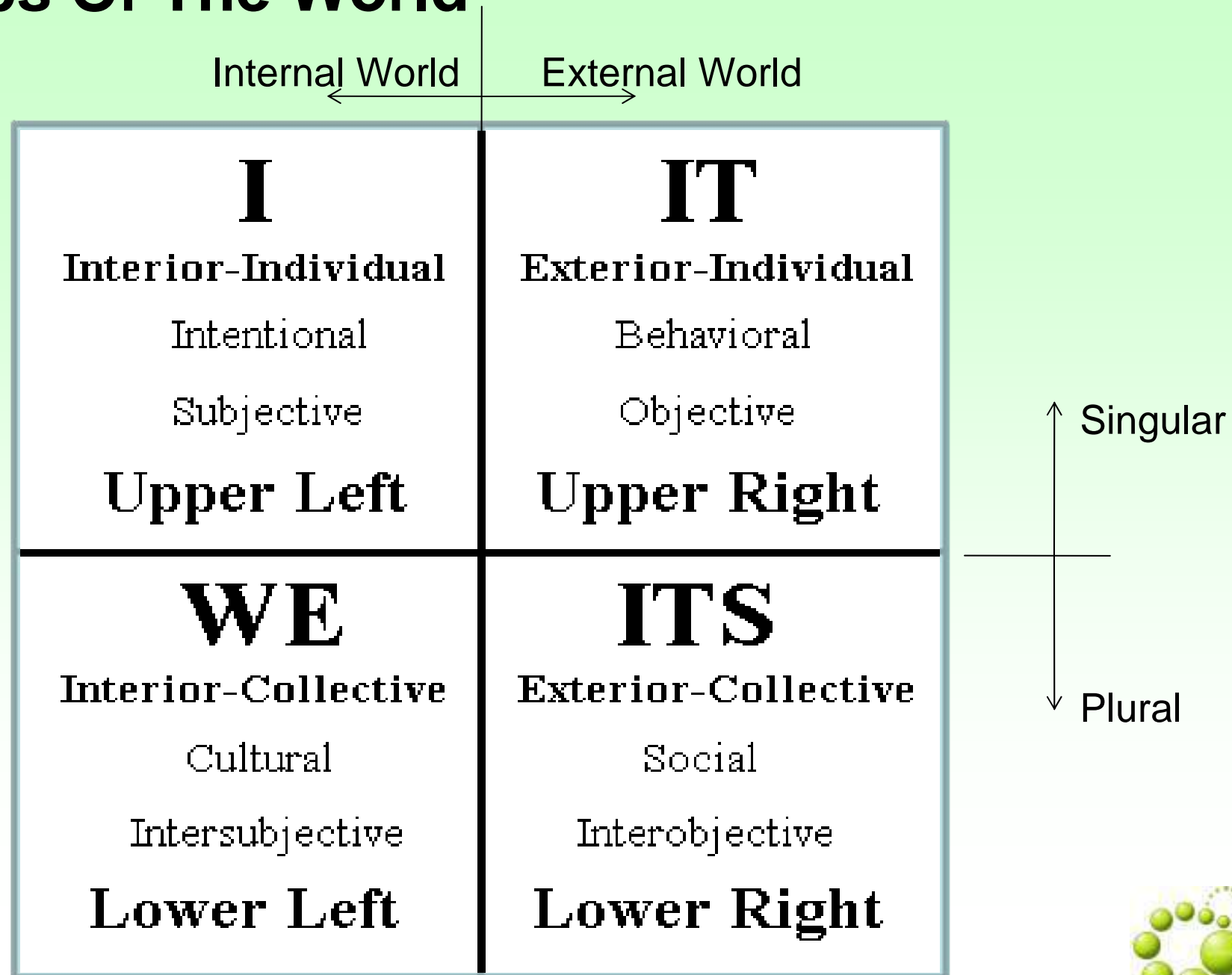


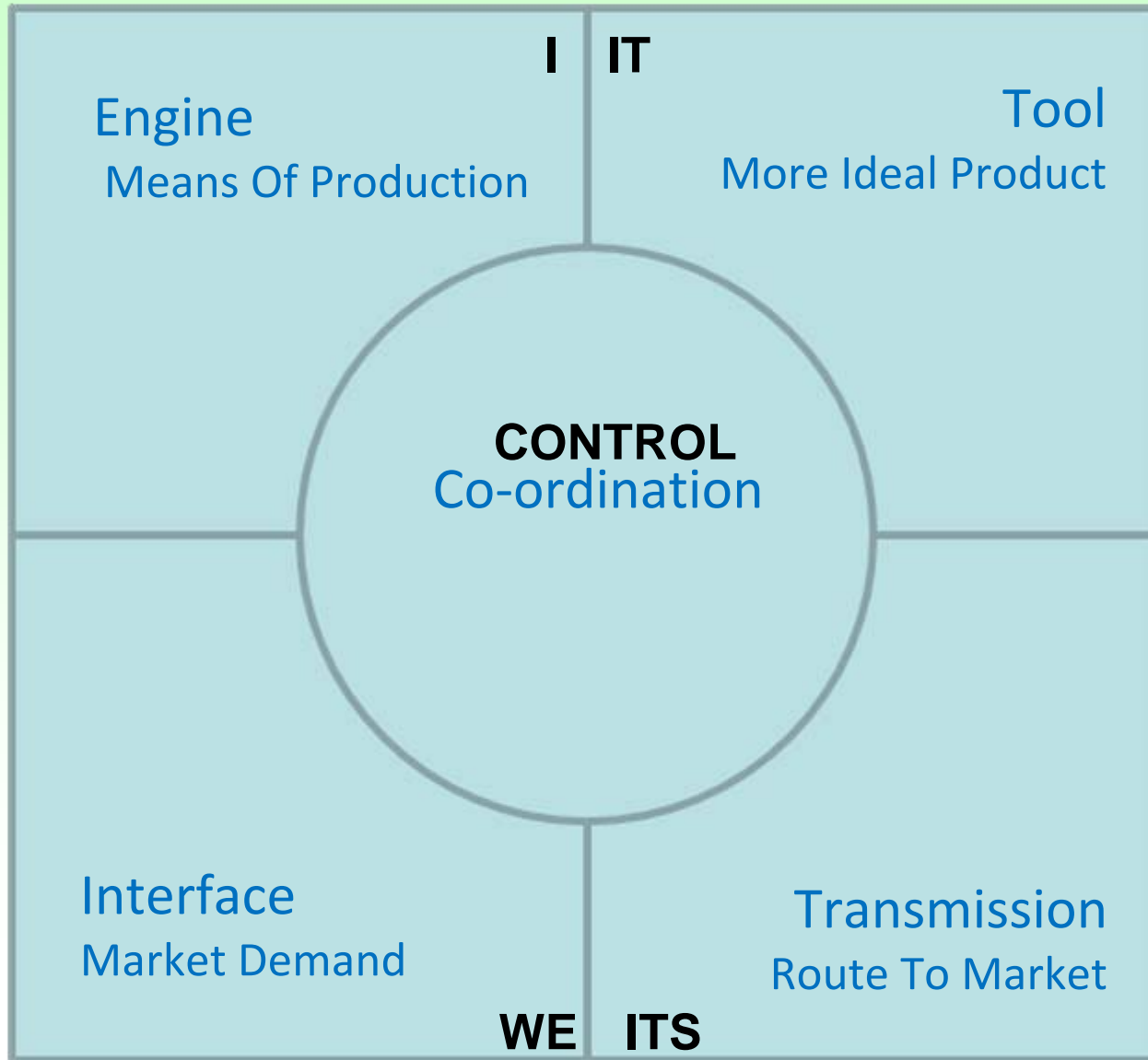
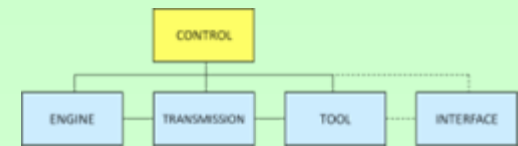


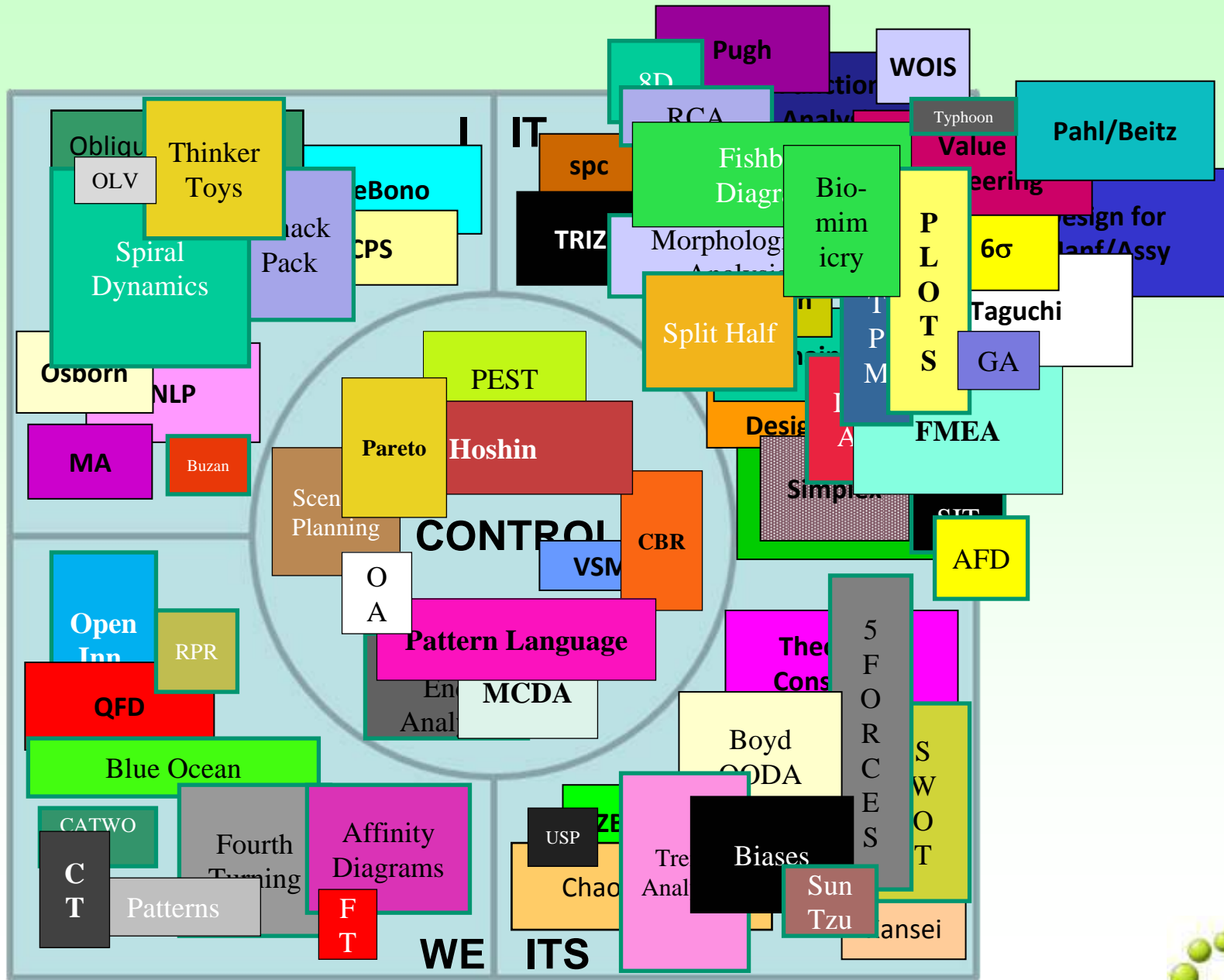


All the insights in one place

Maps Of The World





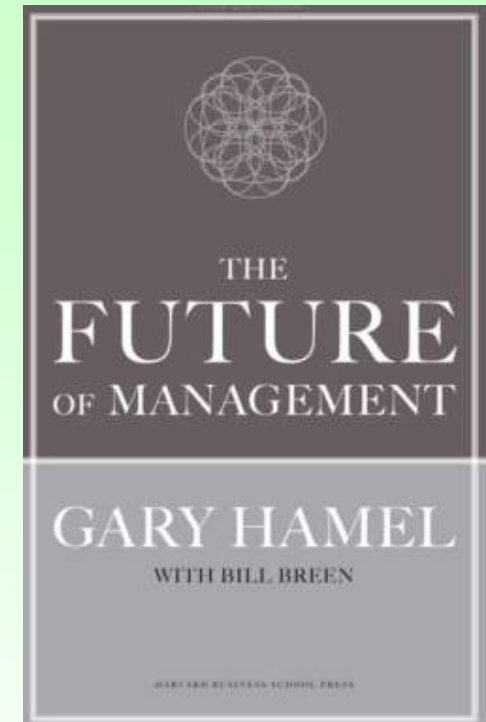
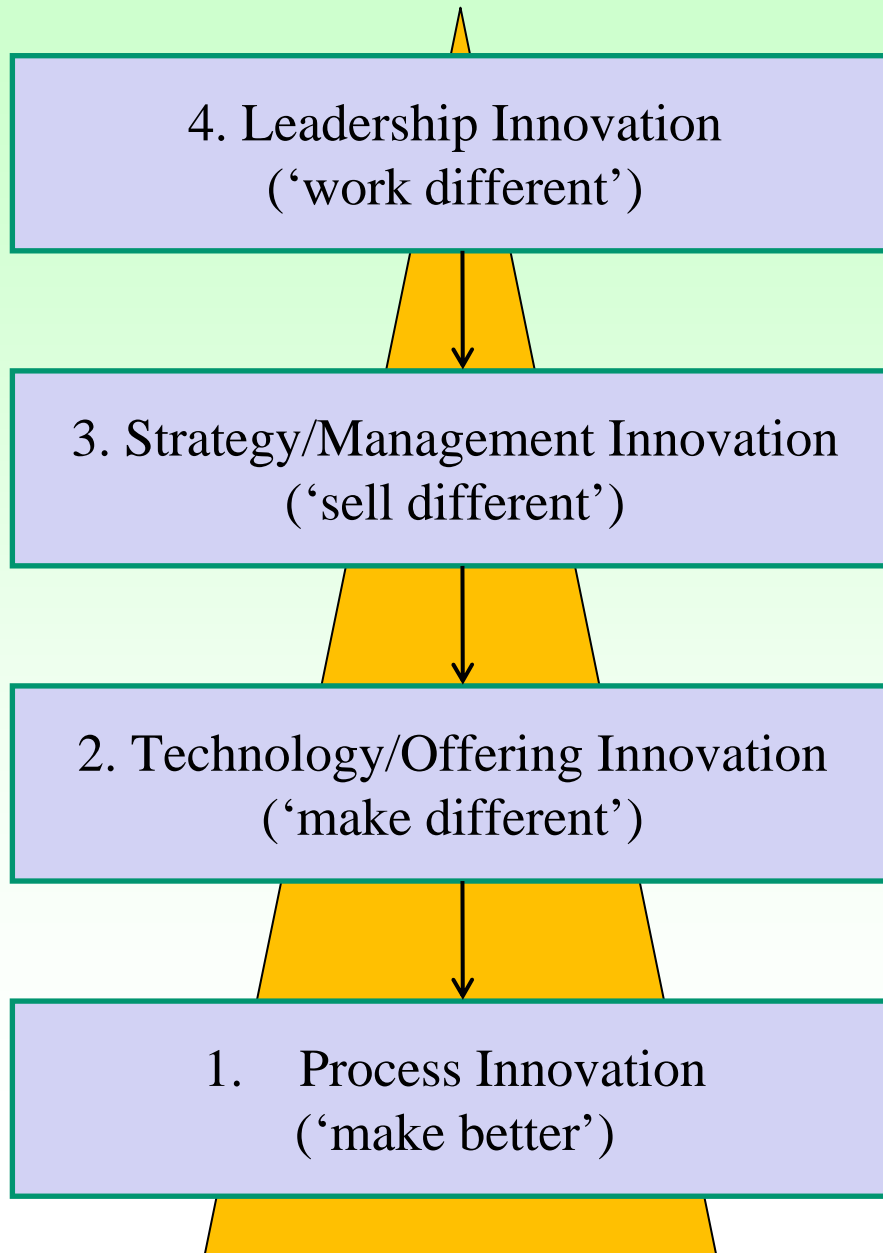


Five Innovation DNA strands

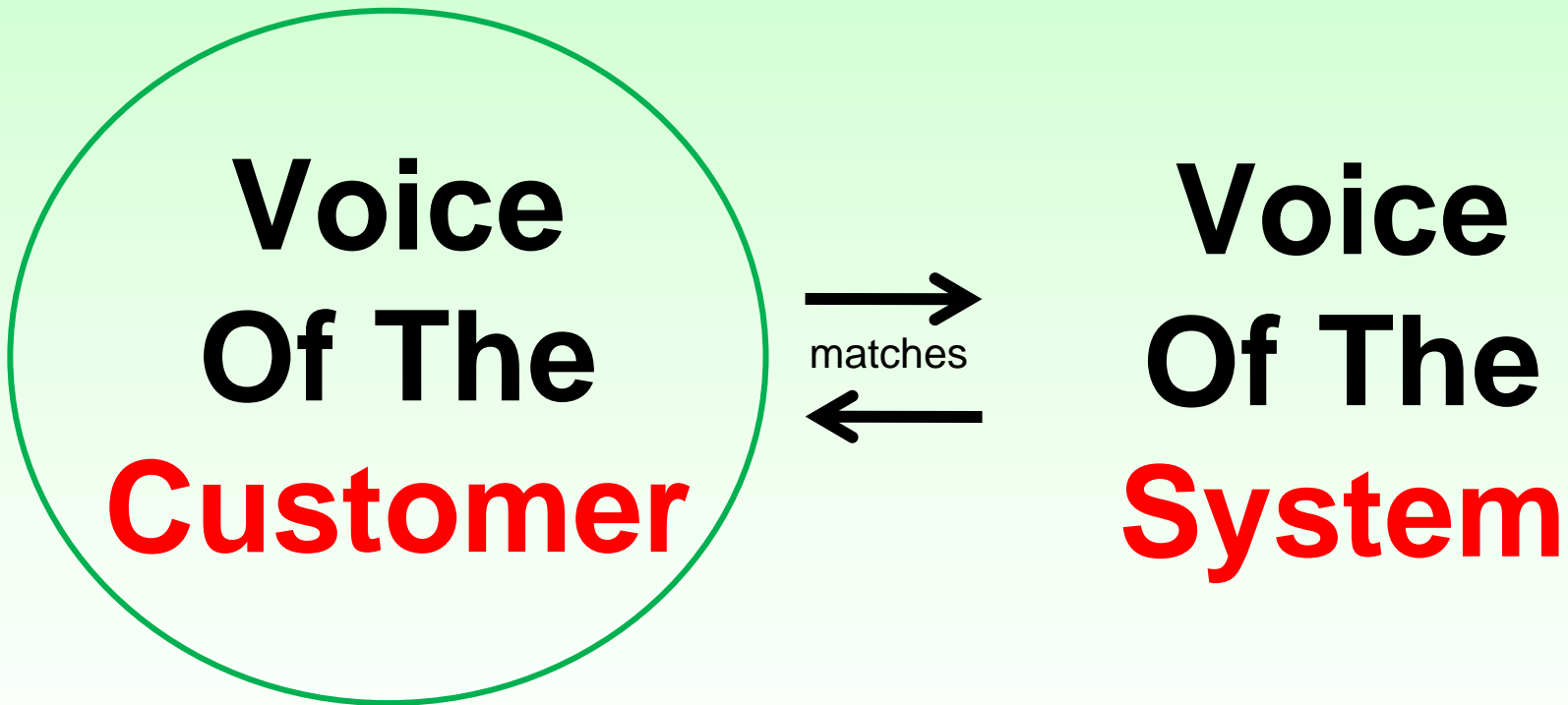
| | |
|--|---|
| I Interior-Individual Intentional Subjective Upper Left | IT Exterior-Individual Behavioral Objective Upper Right |
| WE Interior-Collective Cultural Intersubjective Lower Left | ITS Exterior-Collective Social Interobjective Lower Right |



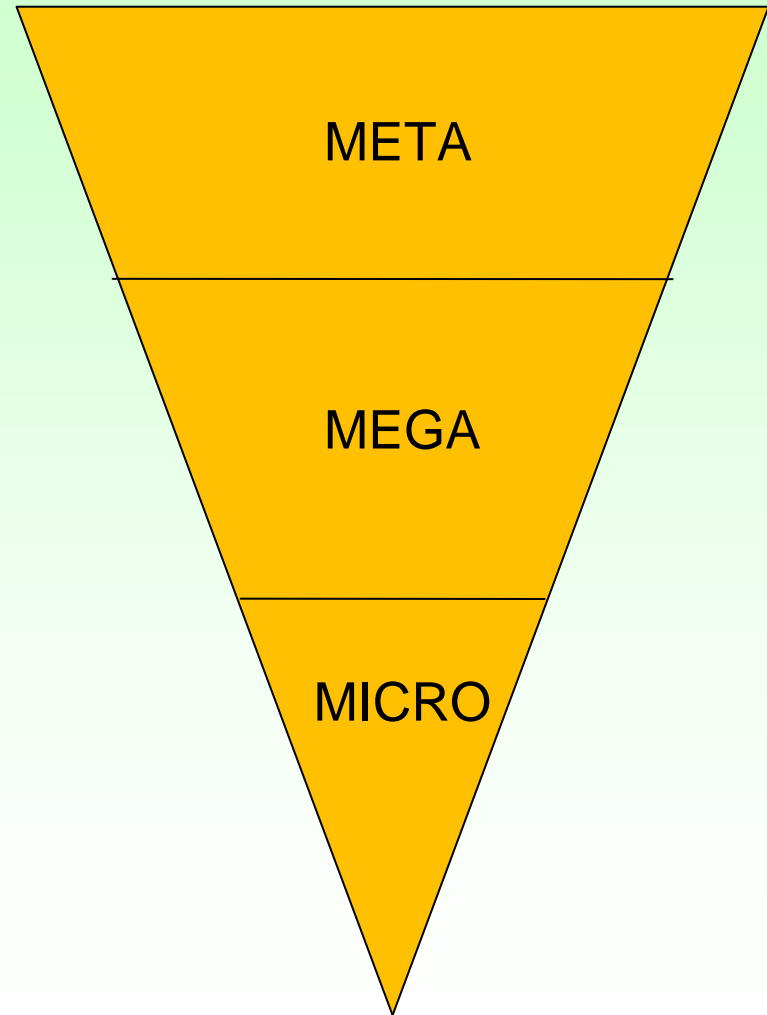
Engaging At All Levels Inside Client Organisations...



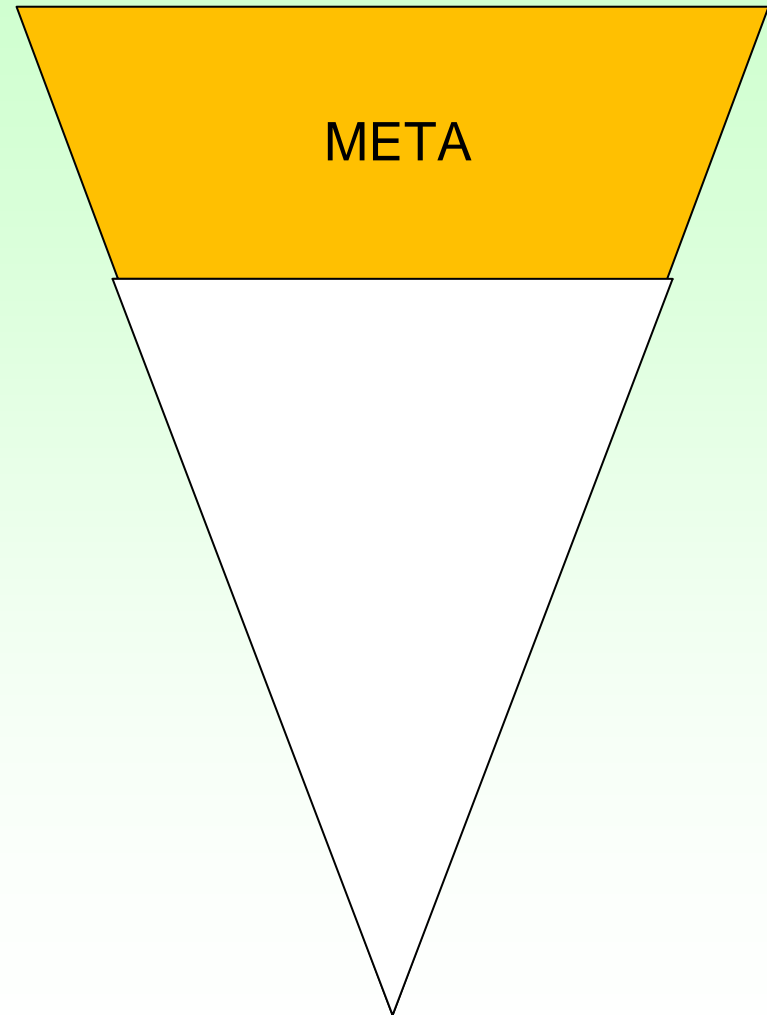
Innovation Happens When....



Maps Of The World



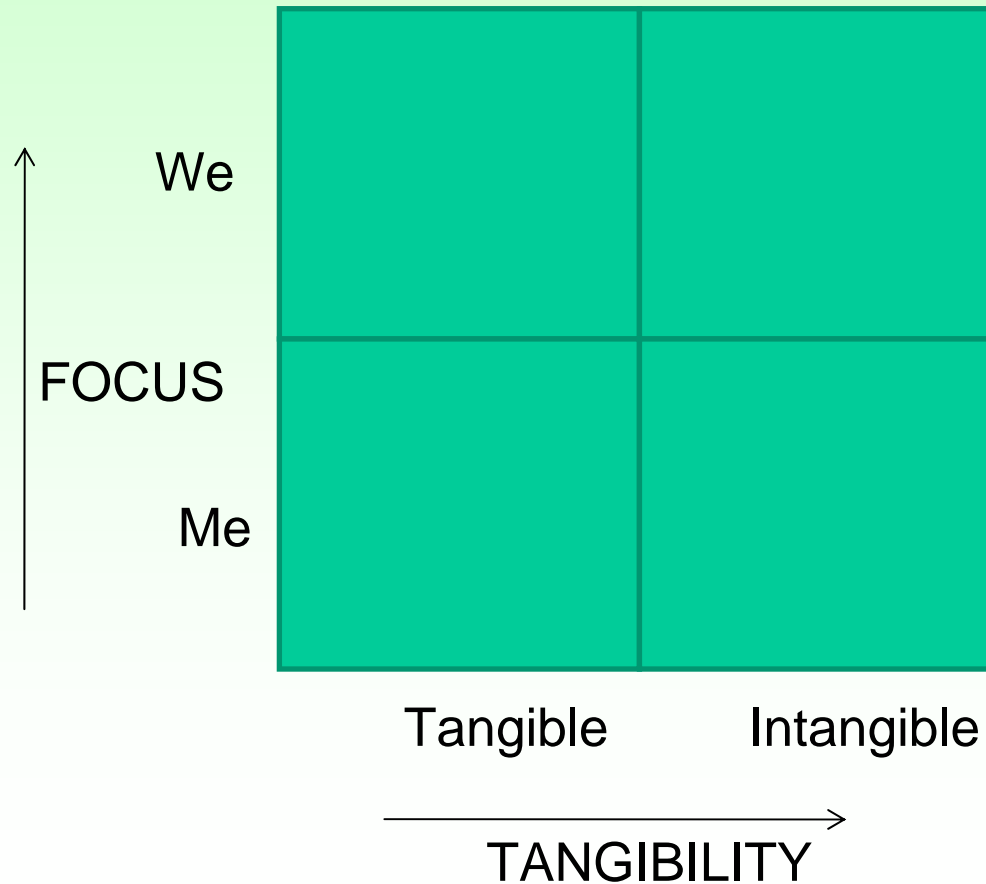
Maps Of The World



- * FUNCTION = 'JOB' = 'OUTCOME'
- * 'Solutions Change; Functions stay the Same'
(we will all continue to want to achieve the function 'communication' but we will not necessarily want a mobile phone to achieve it)
- * TANGIBLE & INTANGIBLE



Customers Buy 'Outcomes'



Customers Buy Outcomes

| | | |
|-------------------------|--|--|
| Collective/ Societal | move family/friends protect family/friends entertain occupants minimise environment damage | 'safe family' 'peace of mind' |
| | move me from A-B transport goods protect me isolate me | reward myself my safety empathetic-conversation 'woman's touch' |
| Tangible | | Intangible |



"A man makes a decision for two reasons – the good reason and the real reason."
J.P.Morgan



Defining Perfection...

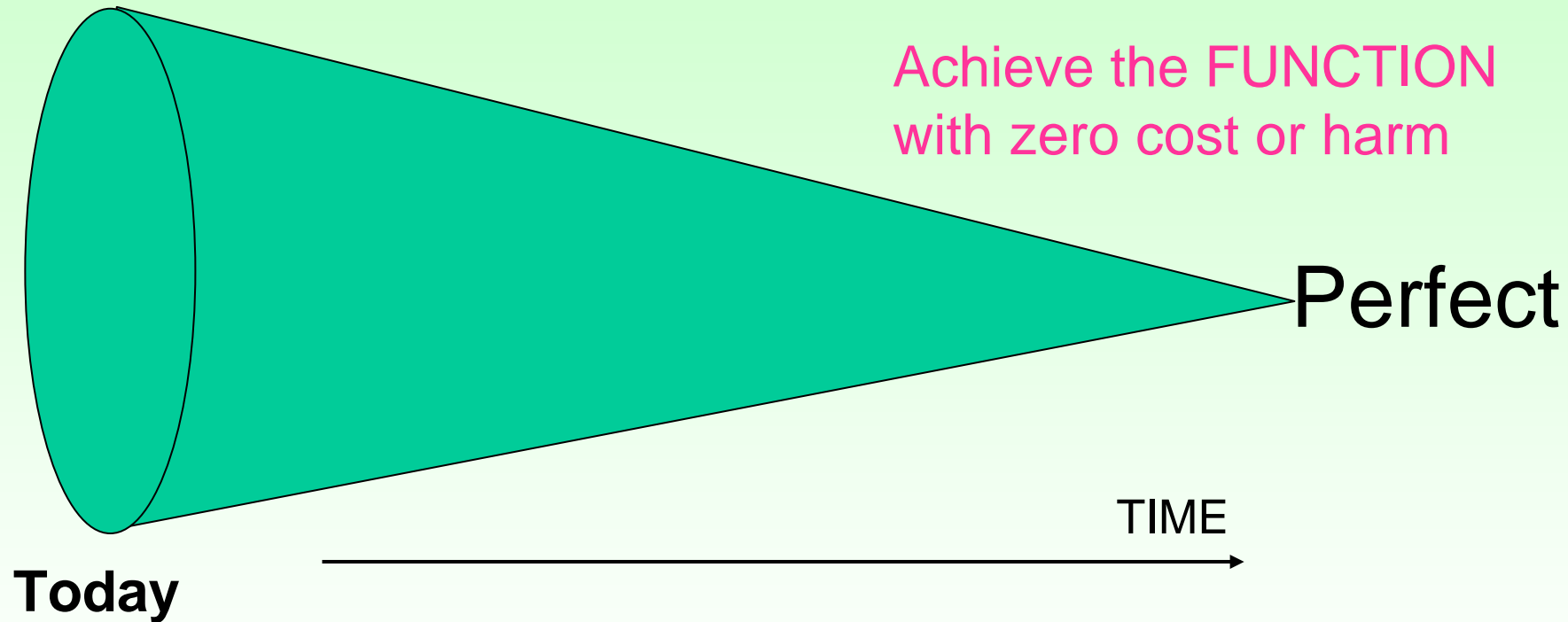


| | | ATTRIBUTE | CUSTOMER A IFR | CUSTOMER B IFR | PROVIDER IFR | etc → |
|---------------------|--|-------------|----------------|----------------|--------------|-------|
| | | | | | | |
| ATTRIBUTE CONFLICTS | | Hits | | | | |
| | | Accuracy | | | | |
| | | Cost | | | | |
| | | Security | | | | |
| | | 'Colour' | | | | |
| | | Logo | | | | |
| | | Hits/screen | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Key questions when looking for conflicts: 'Is there anyone who does not want this IFR?' Why?
 'Is there a new attribute we should be thinking about?'



‘Good Solutions’...

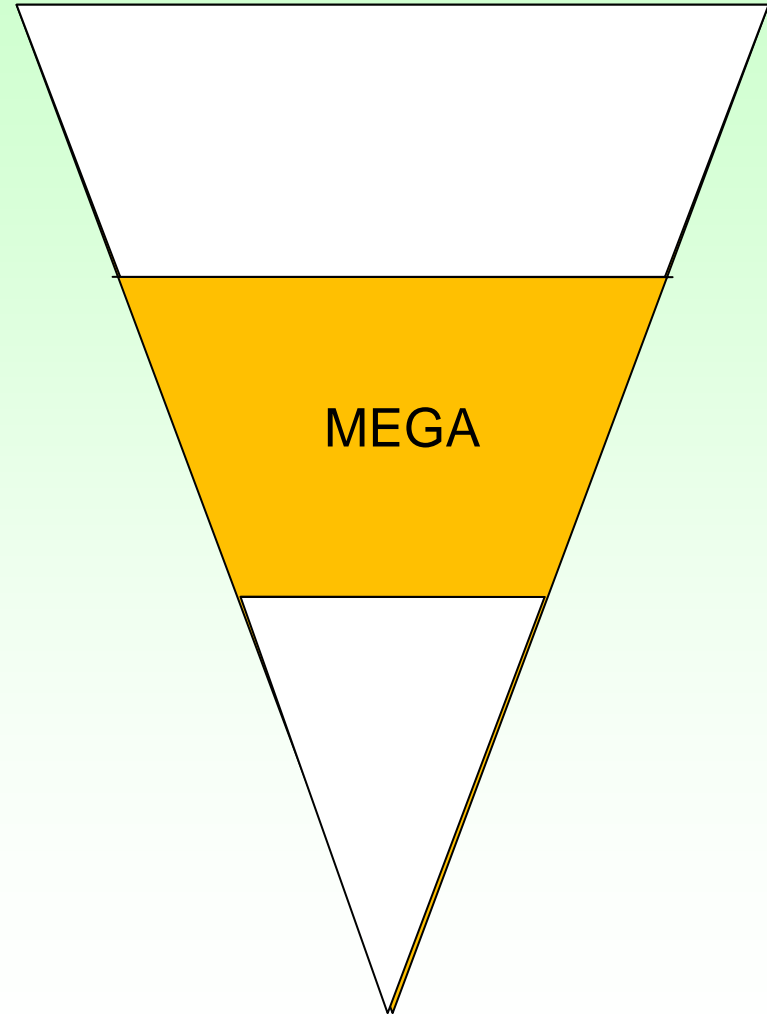


...deliver more perfect outcomes



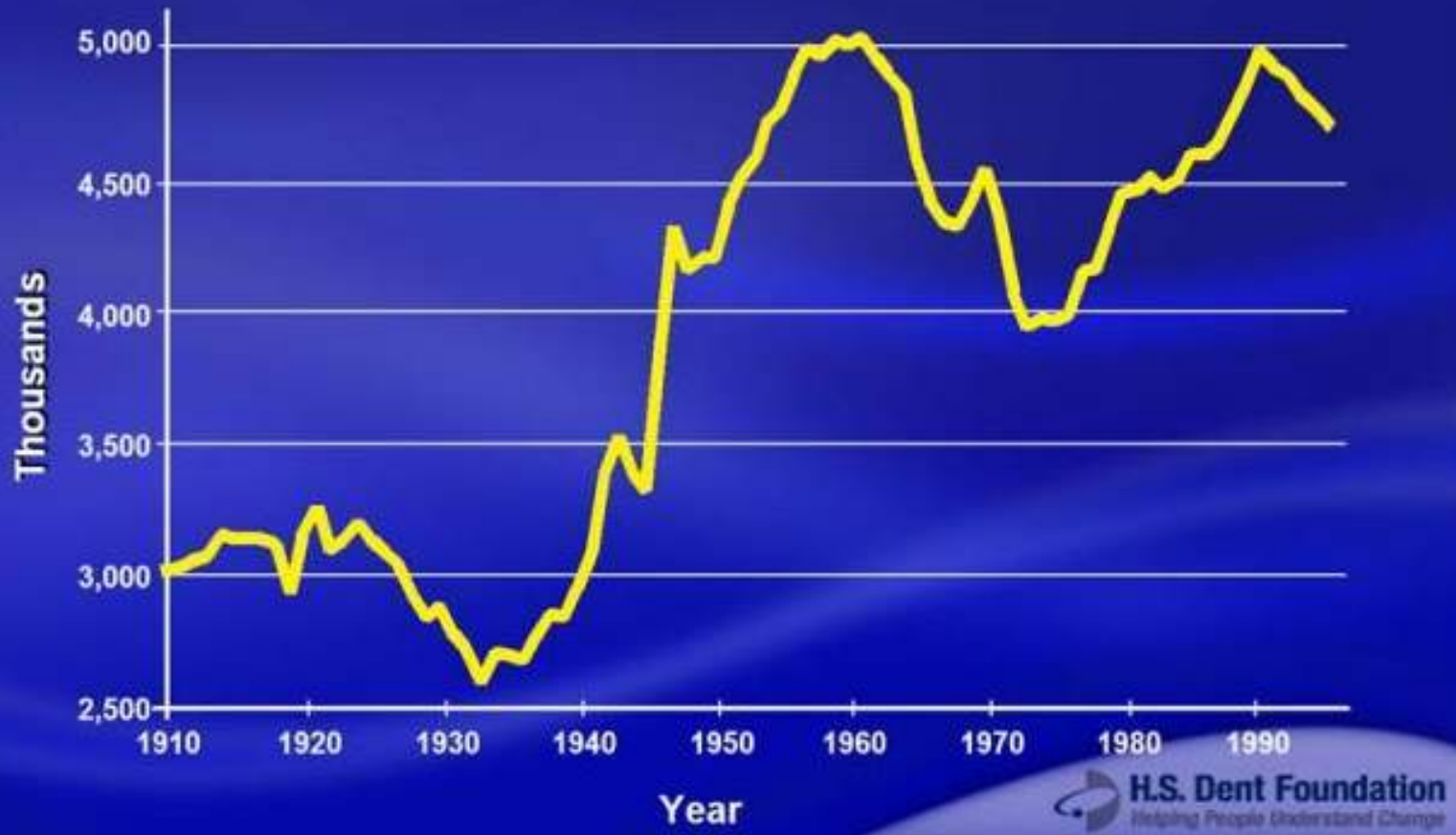
Maps Of The World

**Voice
Of The
Customer**

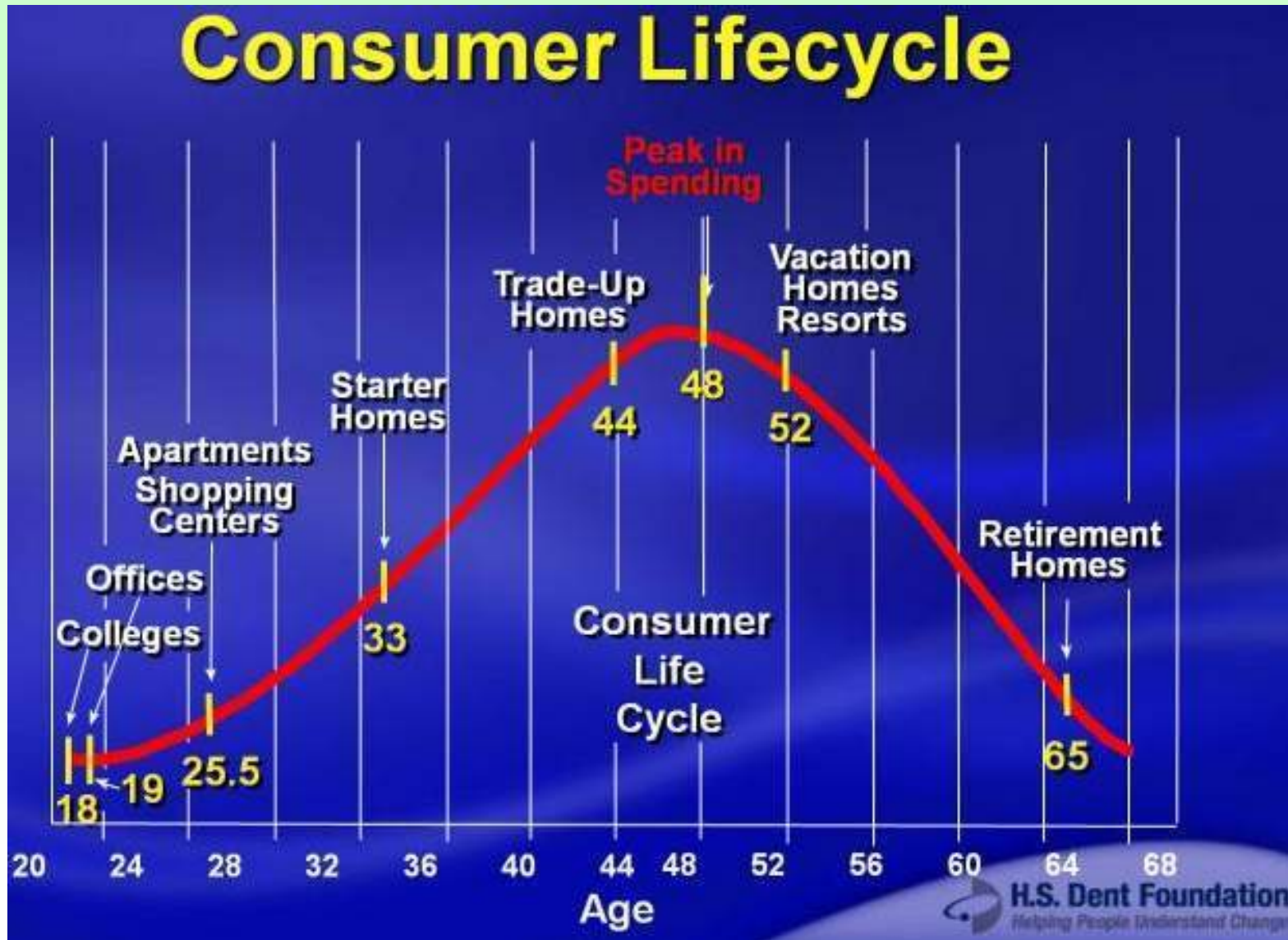


Inevitable Surprises

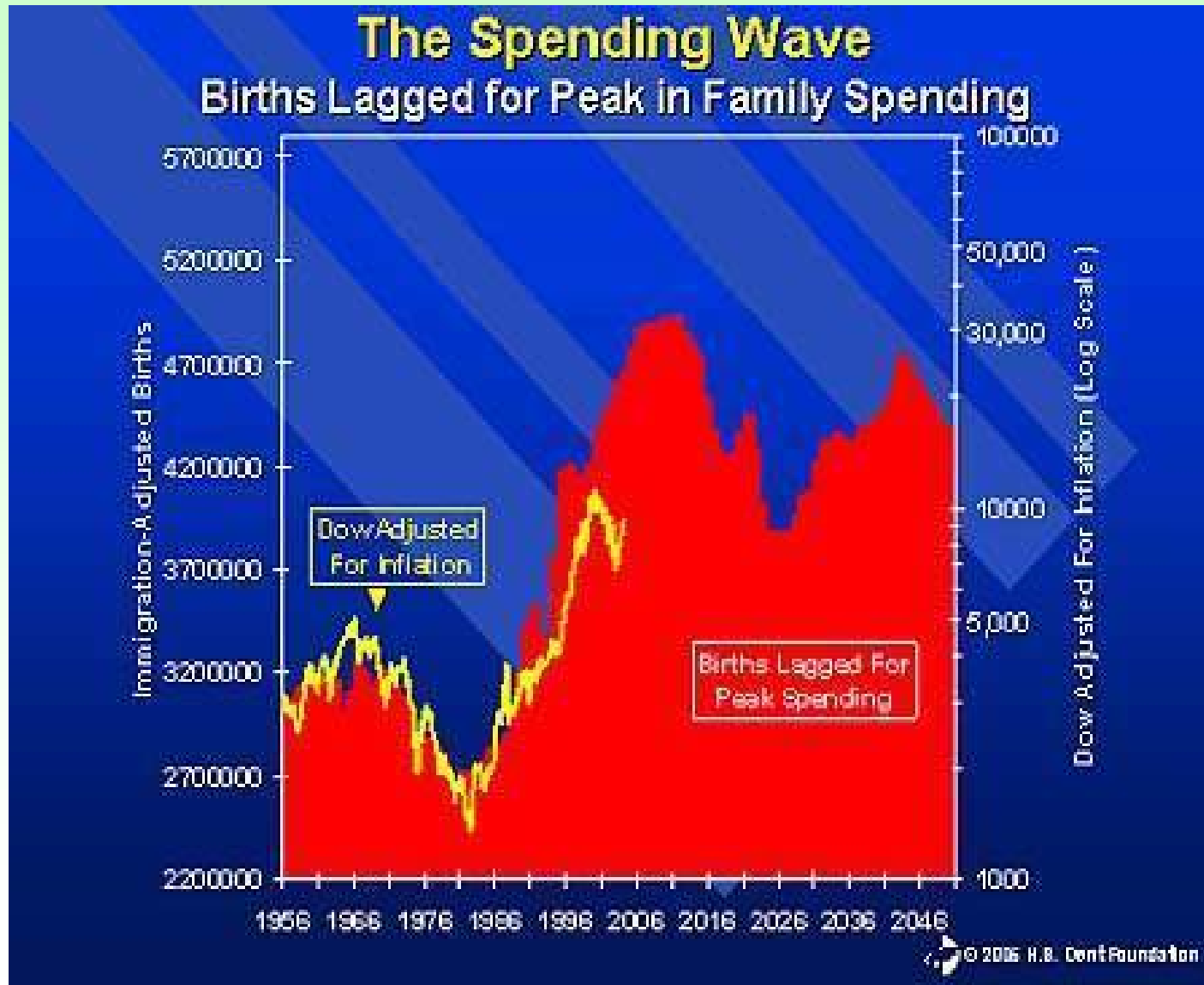
Immigration Adjusted Birth Index



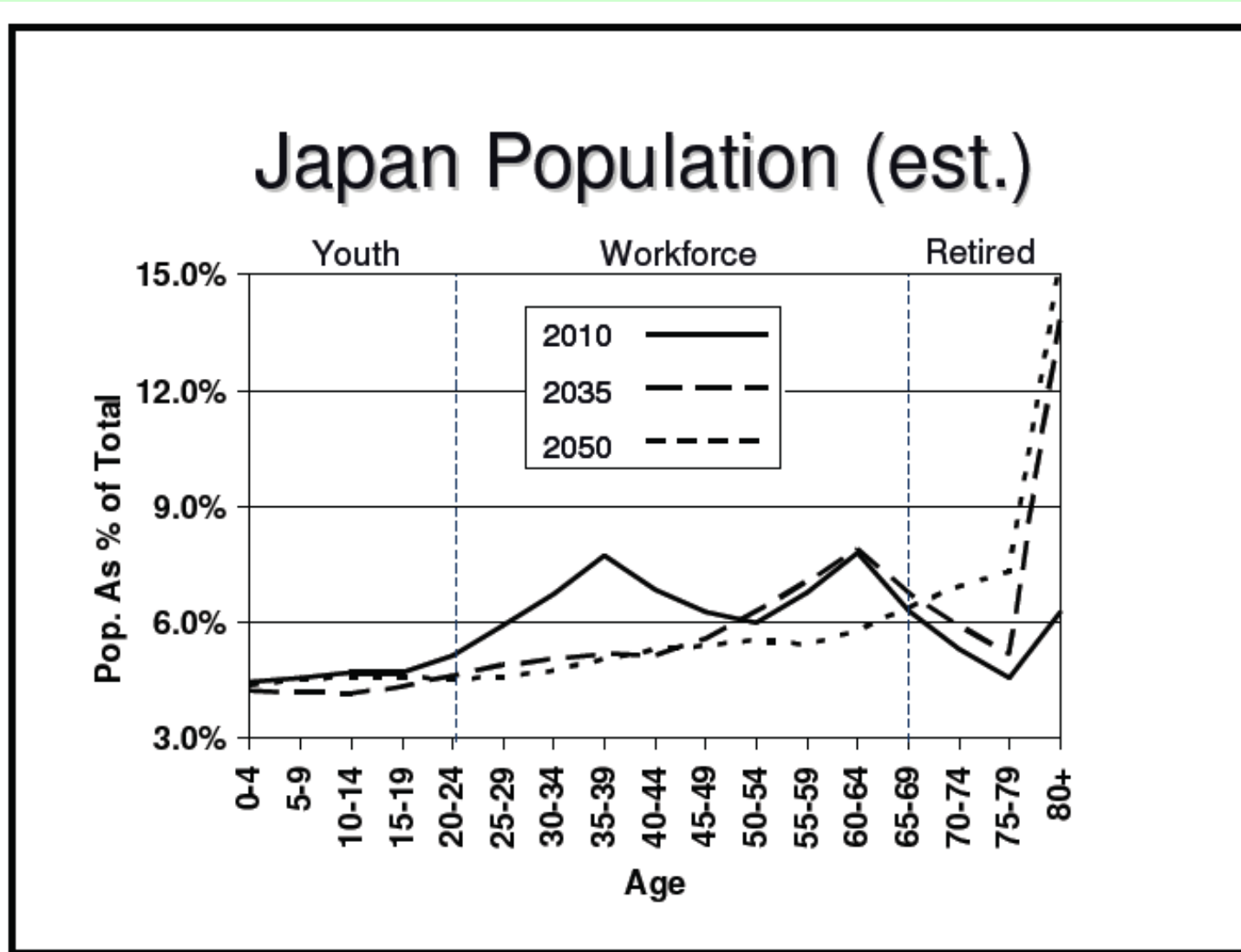
Inevitable Surprises



Inevitable Surprises



Inevitable Surprises II



Case Study Example

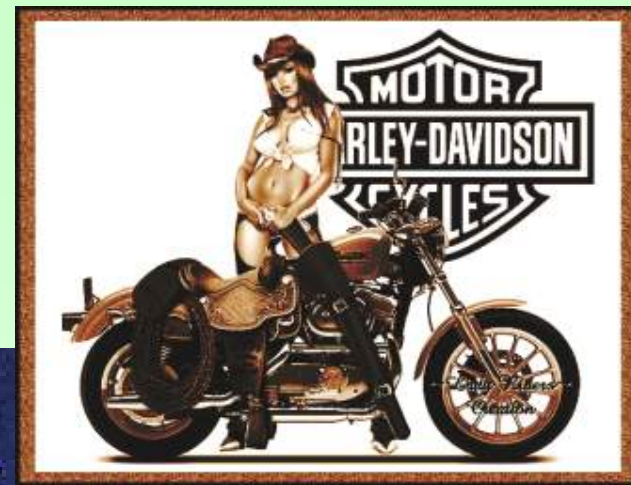


On January 23, 2009, Harley-Davidson announced they were cutting 1,100 jobs, closing facilities and consolidating others. The company reported its fourth-quarter profit fell nearly 60 percent.

Harley-Davidson's stock sold at \$72 a share in 2006 when the Dow Jones Industrial Average was at its highest level in history. It closed at \$11.50 on January 26, 2009.



Case Study Example



Motorcycles vs. Age *"The Male Mid-Life Crisis":*



 **H.S. Dent Foundation**
Helping People Achieve Dental Health



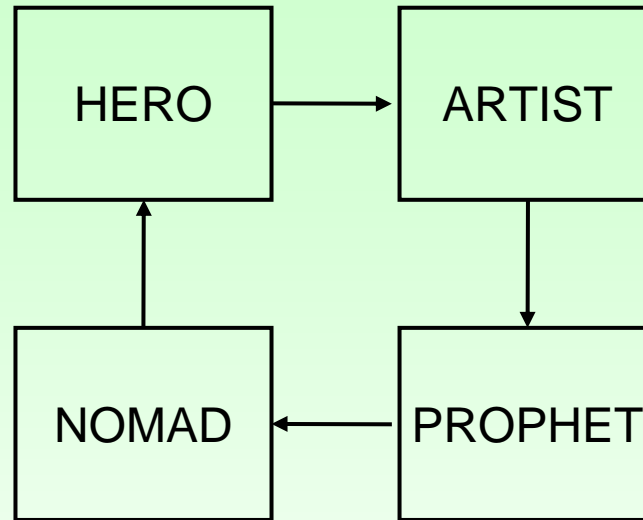
Basic Idea – I – Complex Systems



The manner in which you were raised by your parents
In turn influences how you raise your children



US/UK Generational Cycles



(Generation Y)
(Silent)
(Boomer)
(Generation X)

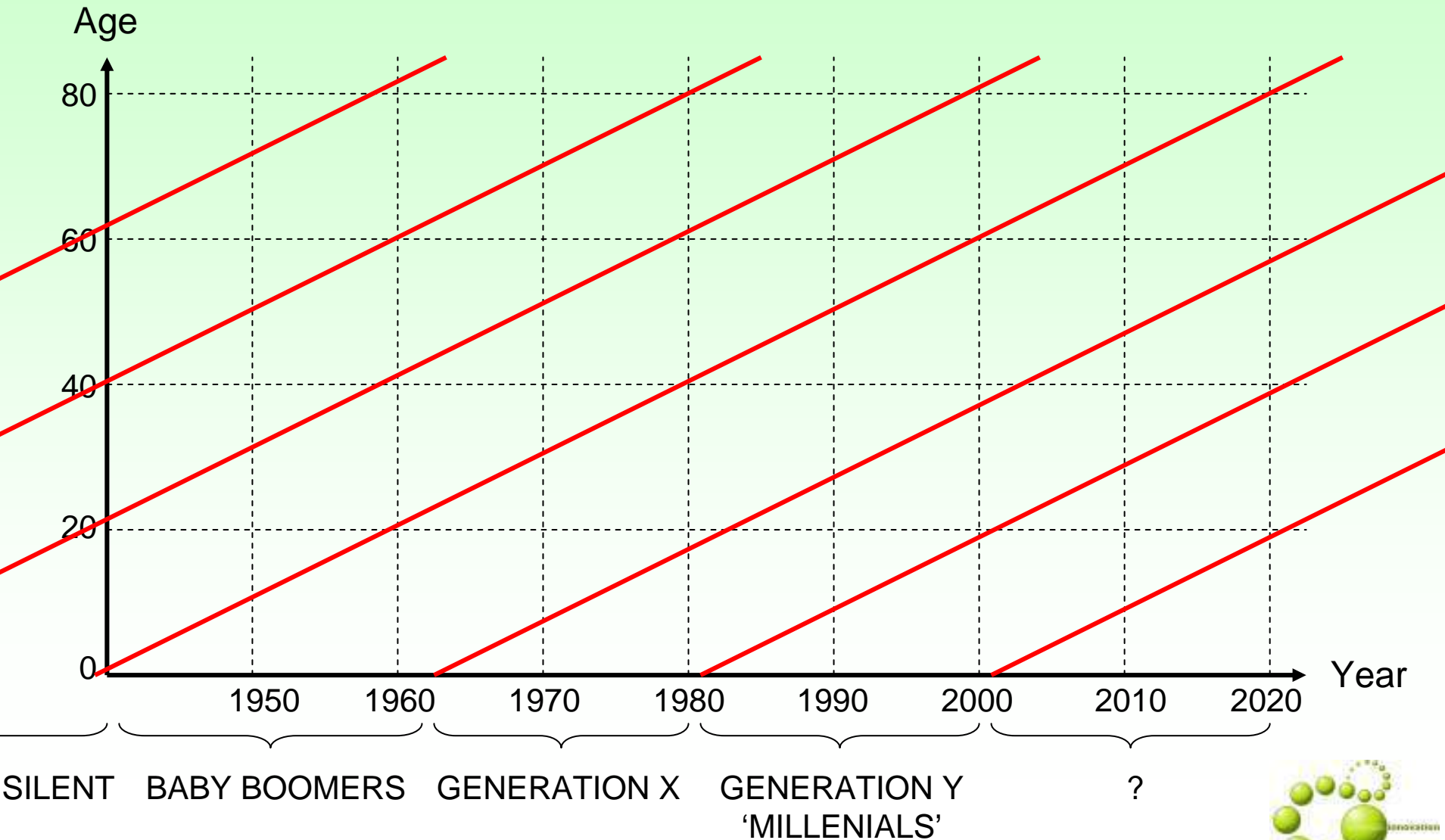
| | 0-20 | 21-41 | 42-62 | 63-83 |
|---------|------------|--------------|------------|----------|
| HERO | protected | heroic | hubristic | powerful |
| ARTIST | suffocated | sensitive | indecisive | empathic |
| PROPHET | indulged | narcissistic | moralistic | wise |
| NOMAD | abandoned | alienated | pragmatic | tough |

(2006 characteristics in red)

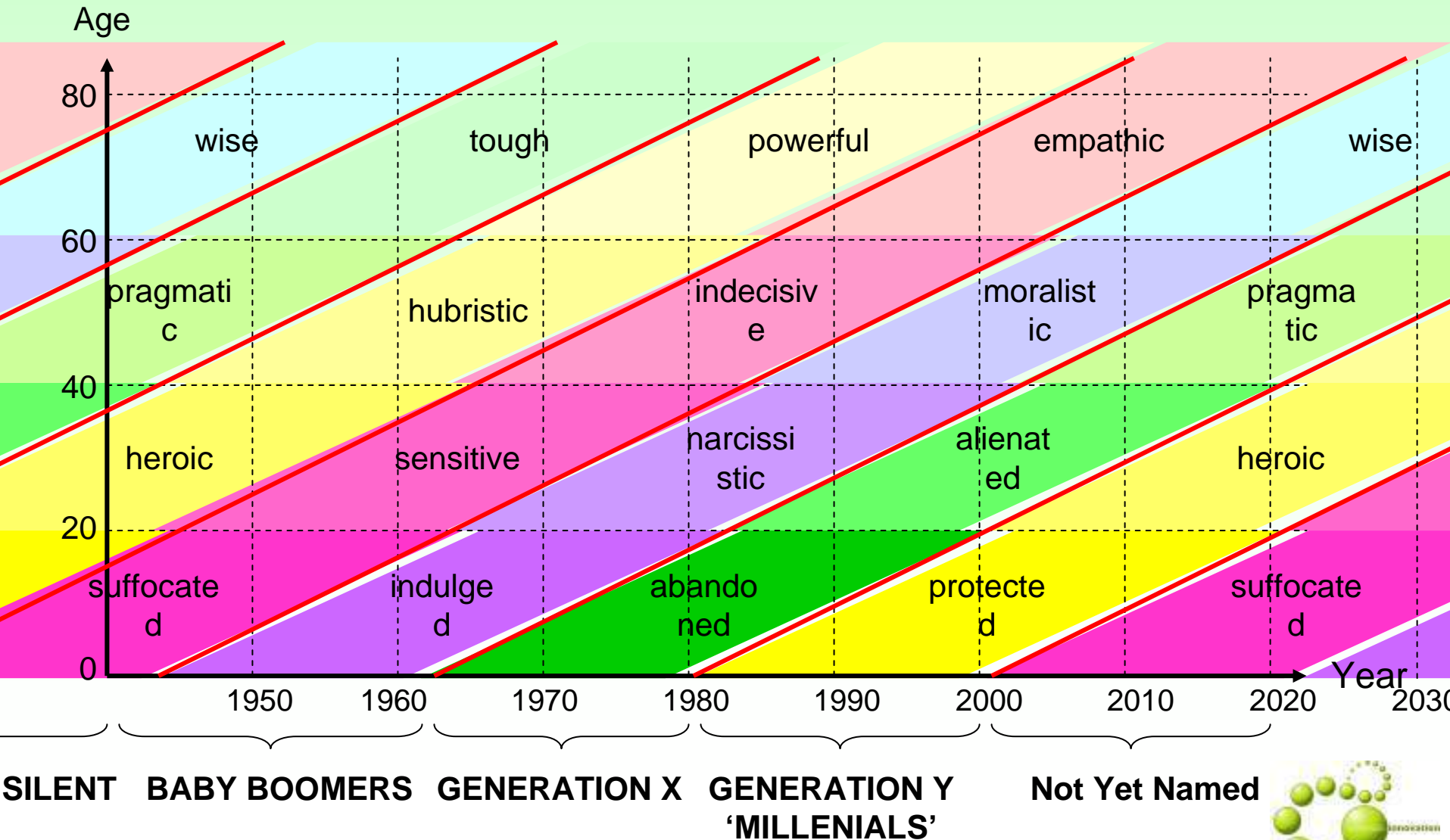
Strauss, W., Howe, N.,
'The Fourth Turning: An American Prophecy',
Broadway Books, New York, 1997.



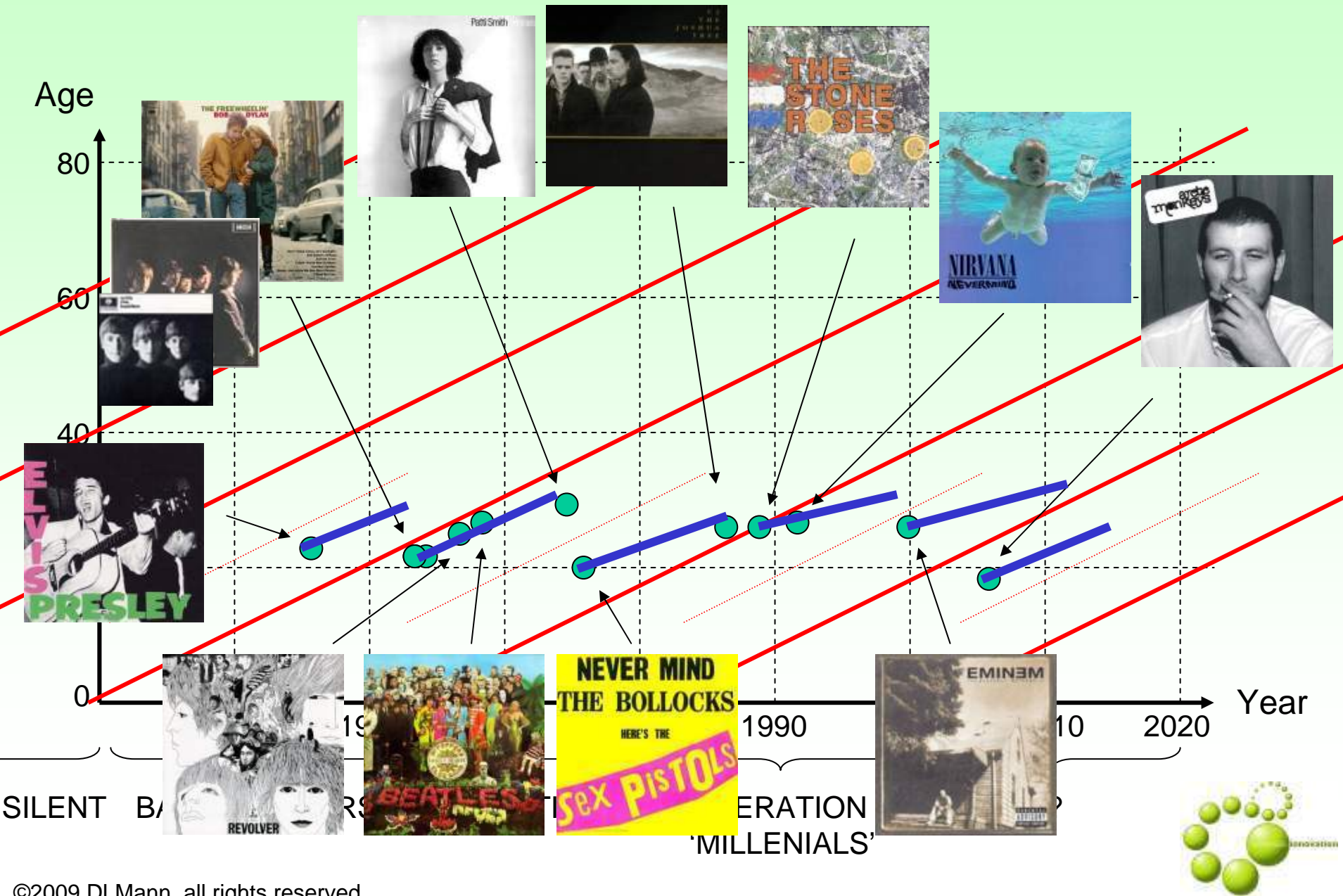
The Impact Of Cultural Shifts On Timing



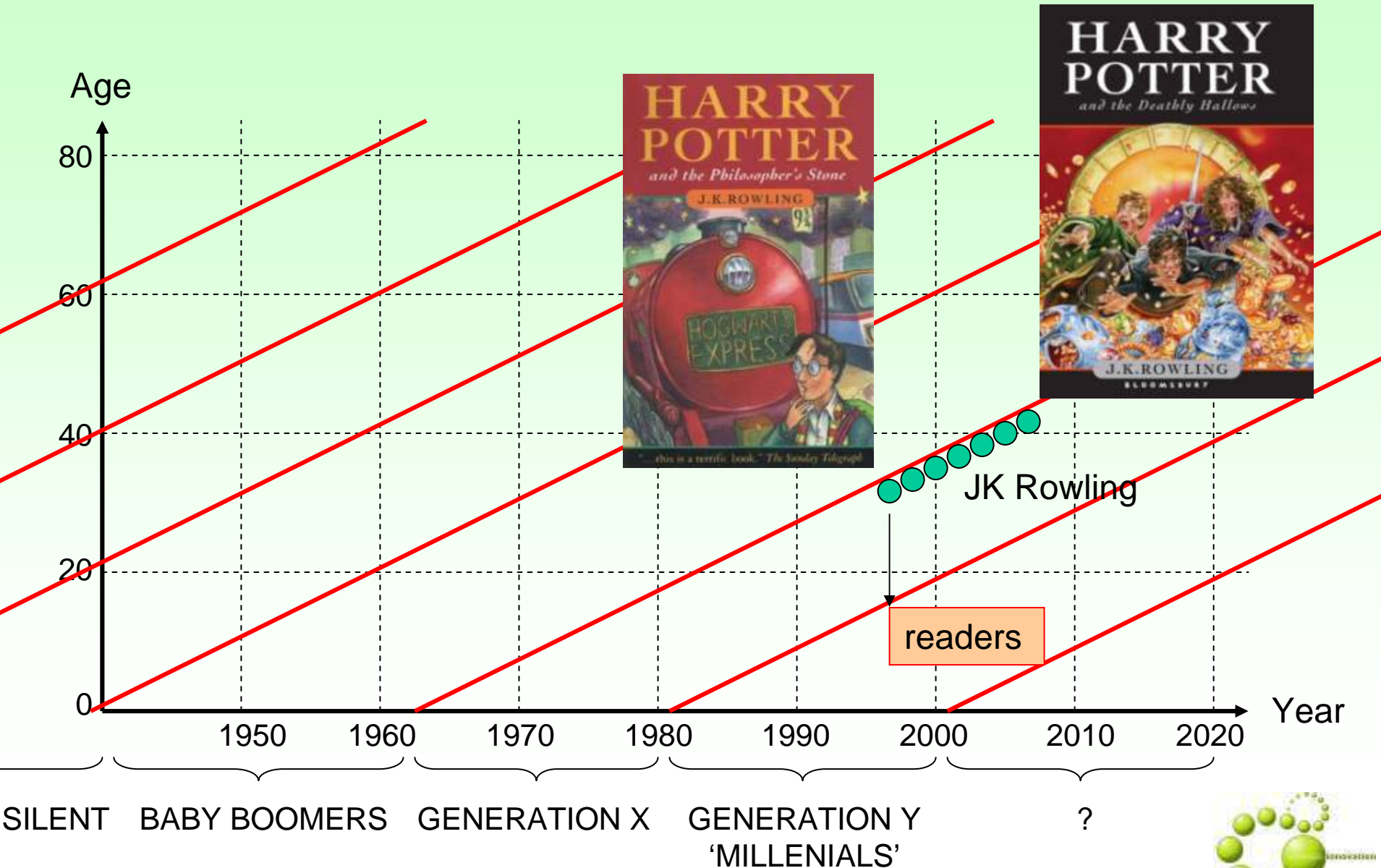
The Impact Of Cultural Shifts On Timing



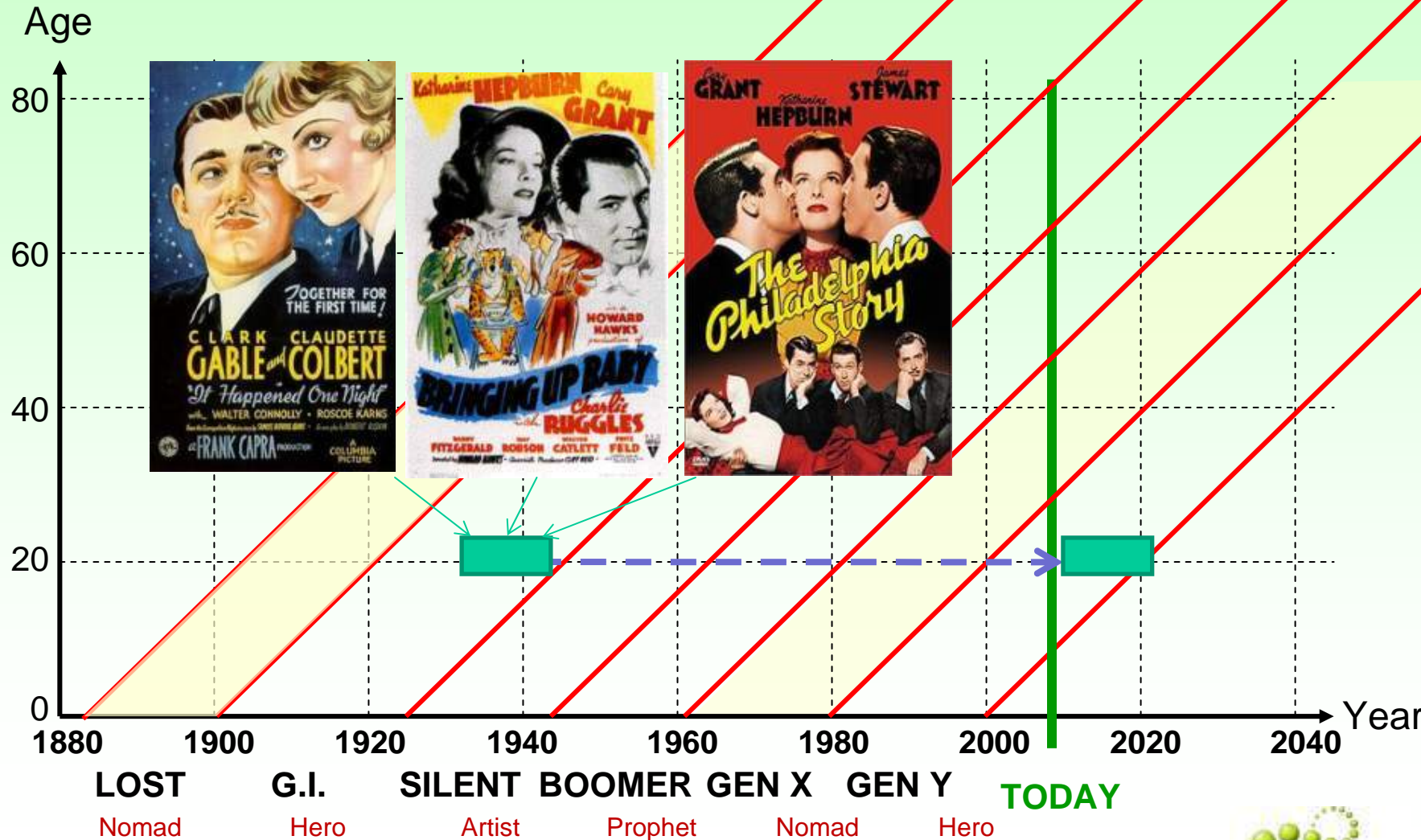
The Impact Of Cultural Shifts On VotC



The Impact Of Cultural Shifts On Timing



The Impact Of Cultural Shifts On Timing

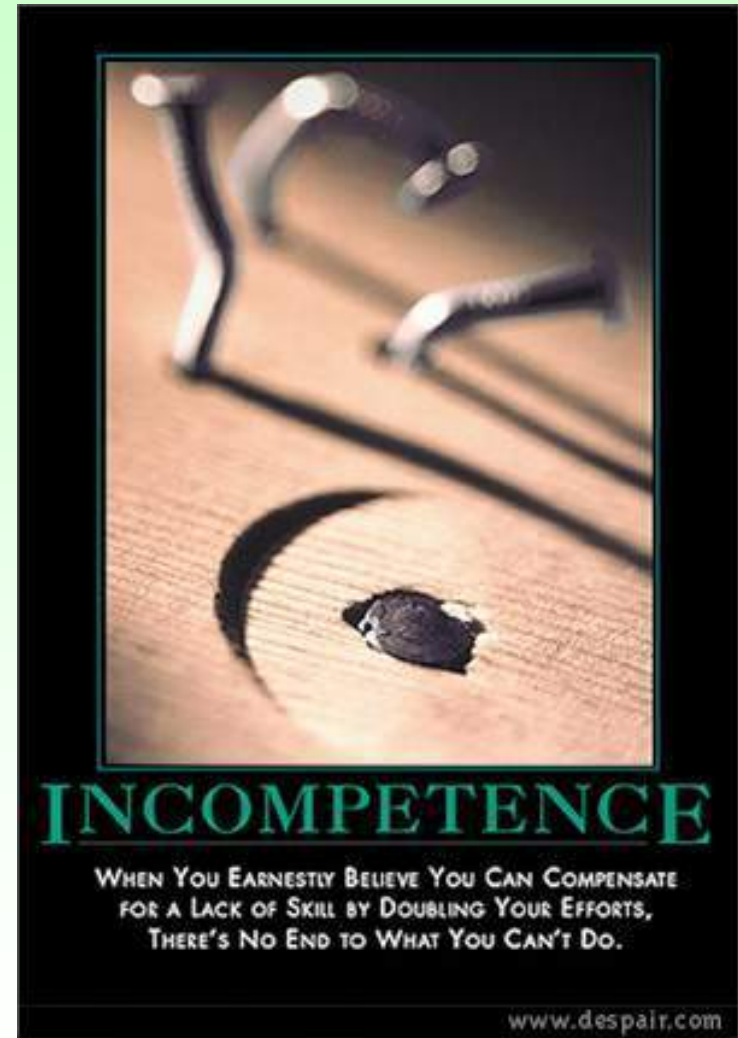


Generation Y – Key Life Contradiction



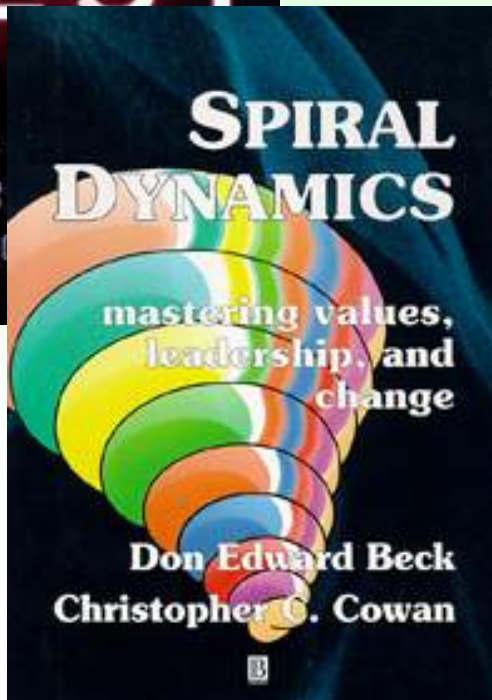
Hero
(told they can do anything)

v



Unskilled
(can't do anything)





- * 40+ years of research
- * The social and psychological equivalent of TRIZ: study and distillation of the way the world works
- * Repeating Patterns: Discontinuous Shifts in consciousness/thinking
- * ‘Social System DNA’



| | | |
|-----------|------------------|--|
| Beige | 1. Survival | newborn infant, Alzheimer's victim, shell-shock |
| Purple | 2. Tribal | gangs/tribal rituals/magic blood oath |
| Red | 3. Feudal | power gods/ego, feudal rule, heroic, predatory 'terrible two's' |
| Blue | 4. Order | codes of conduct, hierarchy/order, 'moral majority' chivalry, puritan |
| Orange | 5. Scientific | materialism, competitive, self-interest, 'nature tamed', 'management by objective' |
| Green | 6. Communitarian | 'sensitive-self', deep ecology. 'politically correct' reconciliation/consensus/networking |
| Yellow | 7. Holarchy | flexibility/adaptive, inter-dependence, co-opetition |
| Turquoise | 8. Holistic | universal order, 'Theory of Everything', spiritual harmony |



Pleasure Seeking

Pain Avoiding

1. Survival

reproduction

food, water, warmth, safety

2. Tribal

good fortune, 'one of the gang'
revenge

curses/spells/rejection/isolation

3. Feudal

ego-gratification, 'my way'
mass adulation, rebellion

defeat, loss of power
rivals/threats

4. Order

stability, obedience, medals
status, promotion

change, rebellion from others
loss of status, outcast

5. Scientific

peer recognition, 'best in show'
biggest/best/fastest, merit pay

losing, 'keeping up with the Jones'

6. Communitarian

'making a difference', harmony
'maximise my potential'

orange or blue attitudes
aggression/conflict/hierarchy

7. Hierarchy

knowledgeable/'wise', 'life-long learning', discovery/challenge

sub-optimization, rigidity
'stupid rules'

8. Holistic

'defining the jigsaw', 'wrong jungle', empathy/trust

non-holistic
non-spiritual





8. Holistic



6. Communitarian



4. Order



2. Tribal

Collective

Social Focus

1. Survival

Individual

3. Feudal

5. Scientific

7. Holarch





Recursive Individual-Collective-individual Cycles



2D Trend Map... Developing Individuals & Teams

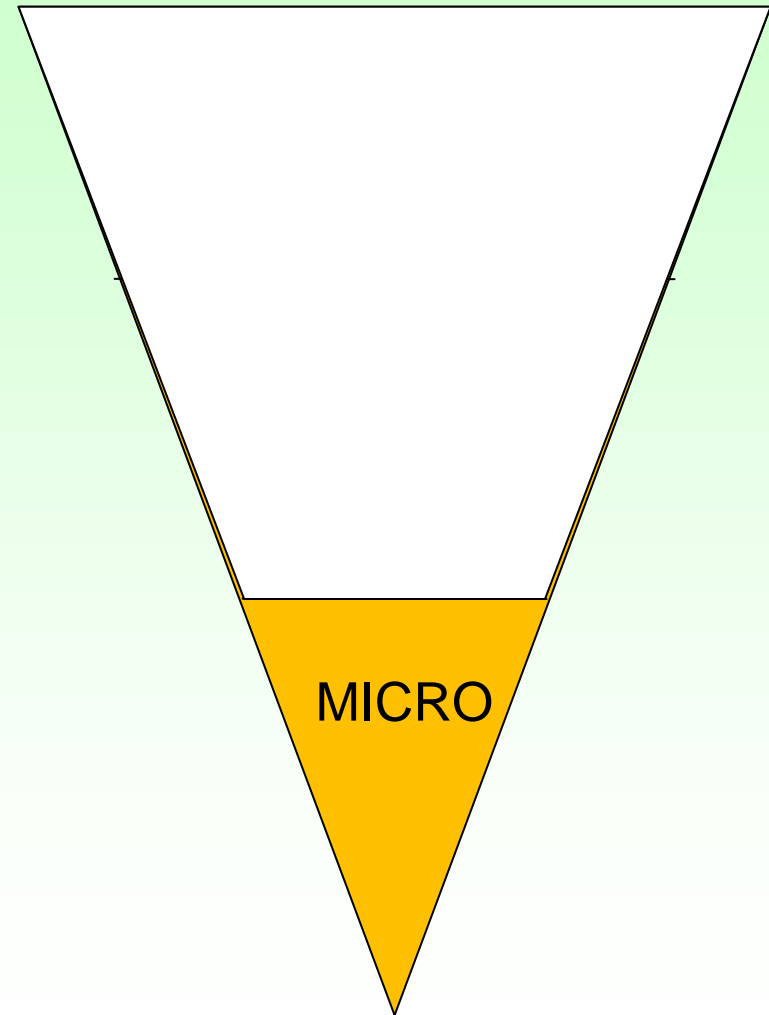
| | NOMAD | HERO | ARTIST | PROPHET |
|-----------------------|------------------------|------------------------|--------|---------------------------|
| 1. Survival (AN) | | | | |
| 2. Tribal (BO) | | | | |
| 3. Feudal (CP) | | Heroic + hedonistic | | |
| 4. Order (DQ) | Pragmatic + moralistic | Heroic + moralistic | | moralistic |
| 5. Scientific (ER) | Pragmatic+ optimising | Heroic + manipulative | | moralistic + manipulating |
| 6. Communitarian (FS) | Pragmatic + indecisive | Heroic + communitarian | | moralistic + indecisive |
| 7. Holarchy (A'N') | Pragmatic + flexible | | | moralistic + flexible |
| 8. Holistic (B'O') | | | | |



| | NOMAD | HERO | ARTIST | PROPHET |
|------------------|--|--|--|---|
| 1. Survival |  | | | |
| 2. Tribal | | | | |
| 3. Feudal | |  | | |
| 4. Order | | | | |
| 5. Scientific | Ms Independent | | | |
| 6. Communitarian |  | |  | Karma Queen |
| 7. Holarchy | | | | |
| 8. Holistic | | | |  |

Maps Of The World

**Voice
Of The
Customer**



Consumer Trends – What's Going On?

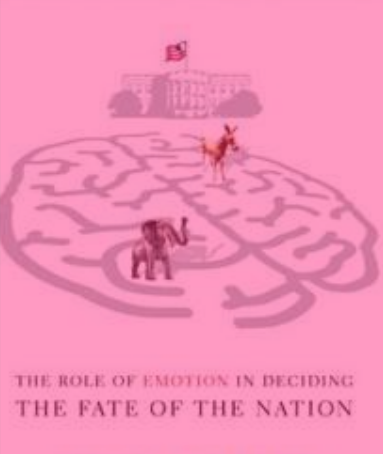
Every retailer spends time capturing and analysing consumer trend information. Almost invariably, once the information is captured, the future will very quickly deviate from what the trend predicts. Even though, we can look at any individual trend and say to ourselves 'yes, I can see that this is a logical trend relevant to my operations' What is going on here?

- ageing population
- longer life expectation (active for longer)
- greater determination to live life to the full
- sharp increase in single-occupancy homes/single parent families
- increasing importance of the extended family
- increasing property prices – children staying home longer
- increasingly sedentary lifestyle (compensated by guilt-trips to gym)
- increasing safety/health consciousness
- increasing religious/spiritual awareness
- 'chutneys' – hand-made goods
- authenticity
- increasing risk aversion
- increasing awareness of sustainability/environmental issues
- Internet shopping/delivery of consumables
- desire for 'little luxuries' – affordably expensive rewards
- highly aspirational materialistic lifestyles ('I-want-more' culture)
- increasing desire to simplify a complex world
- desire for more convenience in mundane tasks
- rising power and influence of female
- disappearance of Mr/Mrs 'Average' – desire for individuality
- desire for 'cocooning' (nest-building)
- higher expectations as customer/greater inclination to complain
- 'Big Mother'

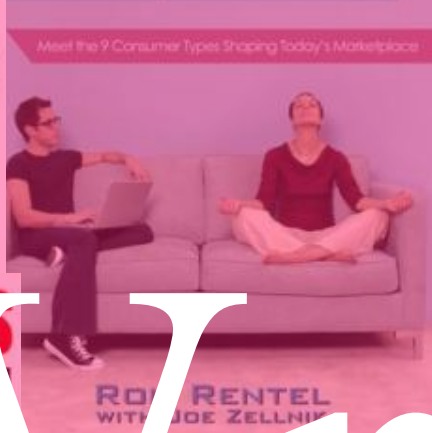




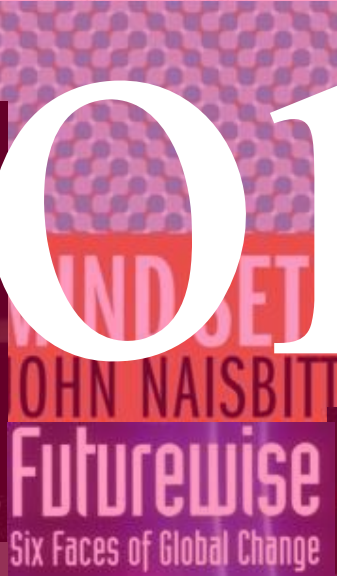
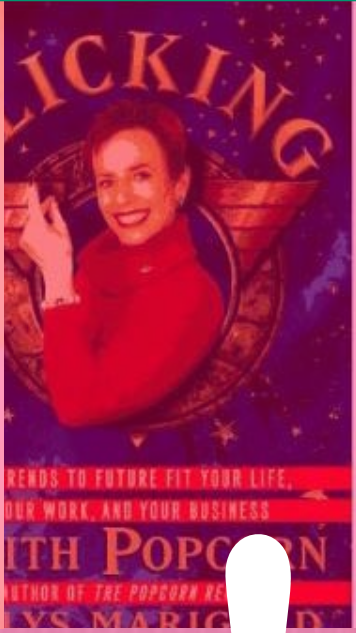
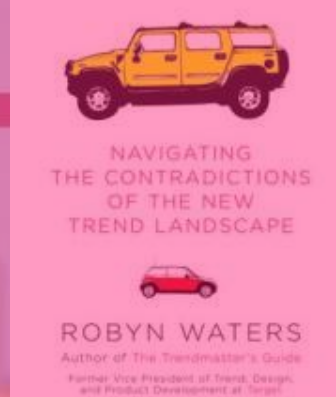
The Political Brain



Karma Queens,
GEEK GODS
& Innerpreneurs



THE
HUMMER
AND
THE MINI





I-Want-It-Now/Life-On-Credit

The existence of easy credit means that many people have switched their spending philosophy from 'buy after I saved' to 'buy-now, pay-later'. The average personal credit card debt in many nations now exceeds 6 months of salary.



trenDNA

N

7

Re-enforcing Trends

- Convenience
- Cocooning
- Individuality
- Brand Addiction
- Little Luxuries
- Internet Shopping
- Ms Independent

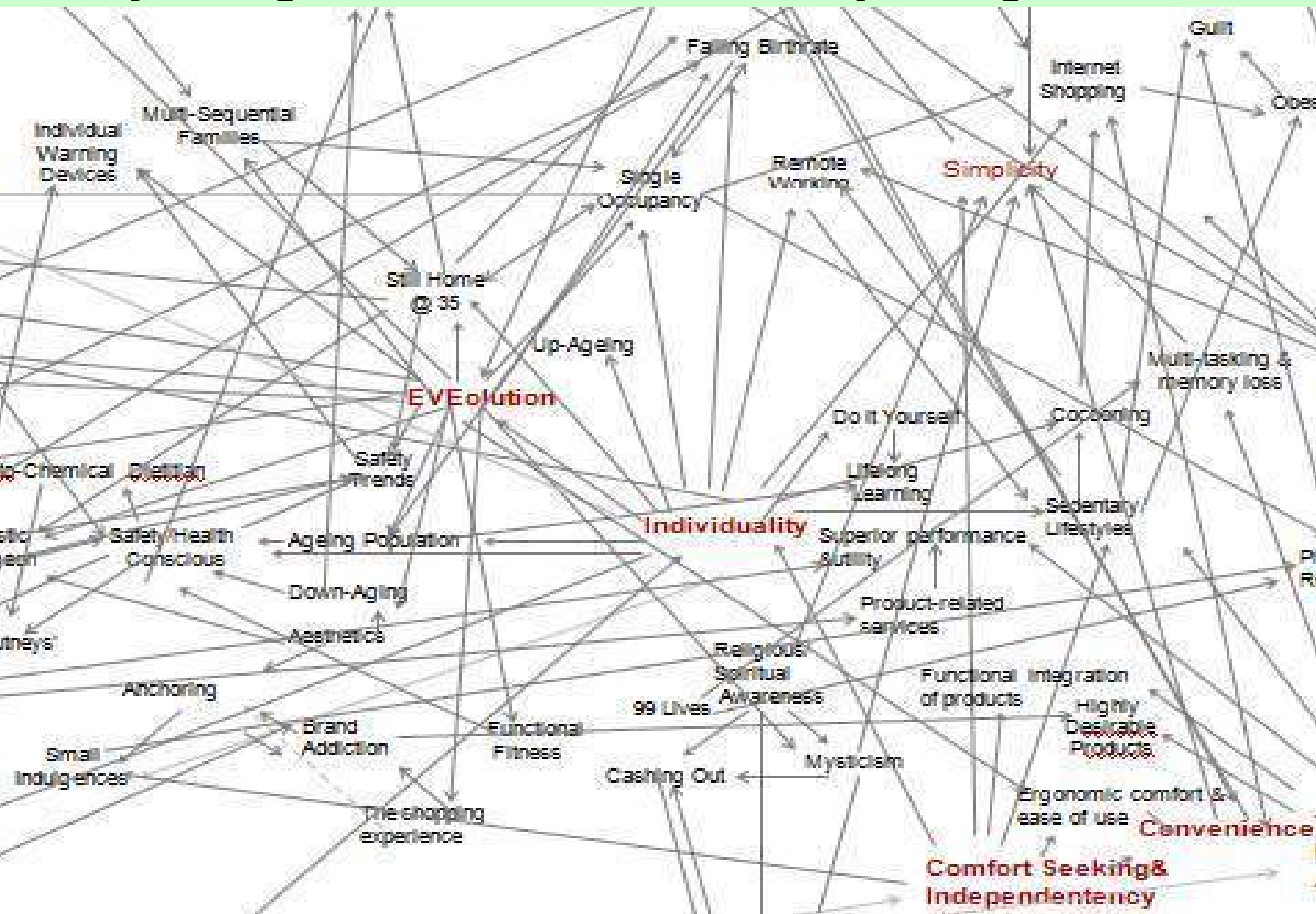
Contradicting Trends

- Guilt
- Spiritual Life
- Save Our Society
- TechnoFear
- Anti-sumers
- X-anonymous
- Opting Out
- Hyper-Local

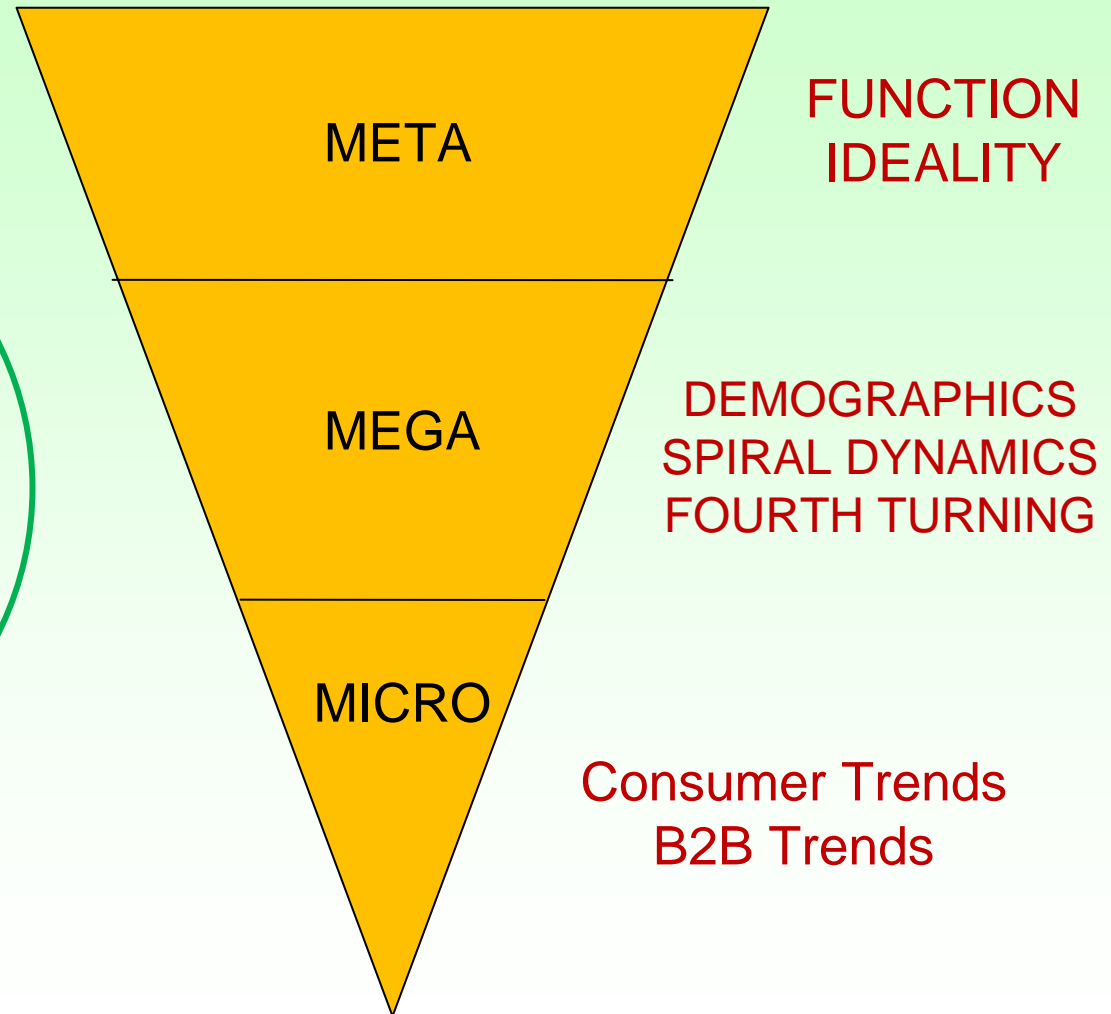
Everything Connected To Everything Else

The diagram illustrates a complex web of interconnected concepts, with arrows indicating the direction of influence or connection. Key nodes include:

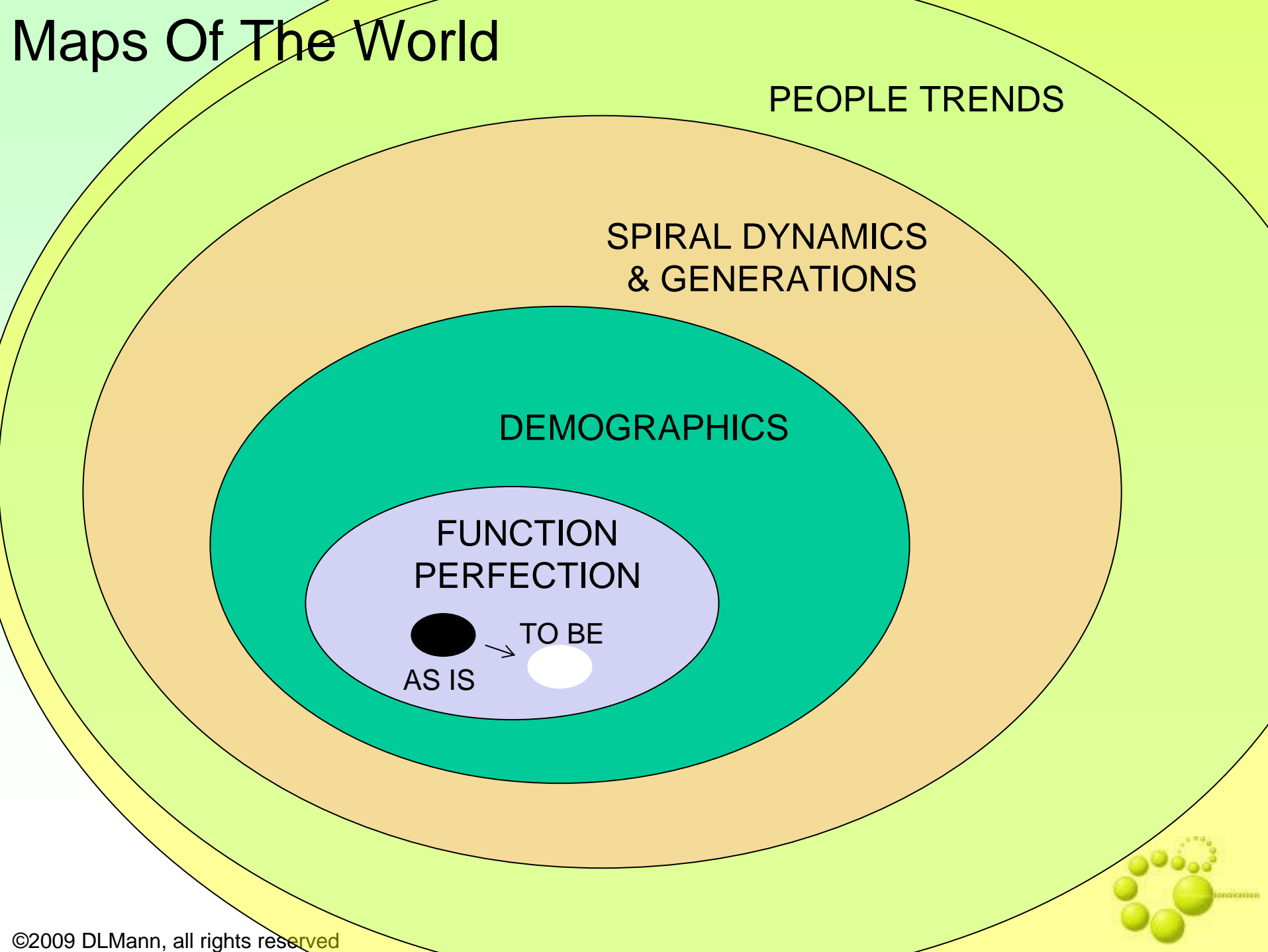
- Individuality** (Central node, connected to many others)
- EVEolution** (Central node, connected to many others)
- Simplicity** (Central node, connected to many others)
- Convenience** (Central node, connected to many others)
- Comfort Seeking & Independency** (Central node, connected to many others)
- Other nodes**: Falling Birthrate, Internet Shopping, Guilt, Obesity, Single Occupancy, Remote Working, Up-Ageing, Still Home @ 35, Safety Trends, Ageing Population, Down-Aging, Aesthetics, Brand Addiction, The shopping experience, Functional Fitness, Cashing Out, Mysticism, Ergonomic comfort & ease of use, Highly Desirable Products, Functional integration of products, Product-related services, Superior performance, Lifelong Learning, Do it Yourself, Cooking, Multi-tasking & memory loss, Sedentary Lifestyles, Safety/Health Conscious, Safety Warnings, Individual Warning Devices, Multi-Sequential Families, to-Chemical Diet, to-Chemical, Anchoring, Small Indulgences, Religious, Spiritual Awareness, 99 Lives, 9/11, P.R., and P.R.



Maps Of The World

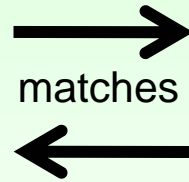


Maps Of The World



Innovation Happens When....

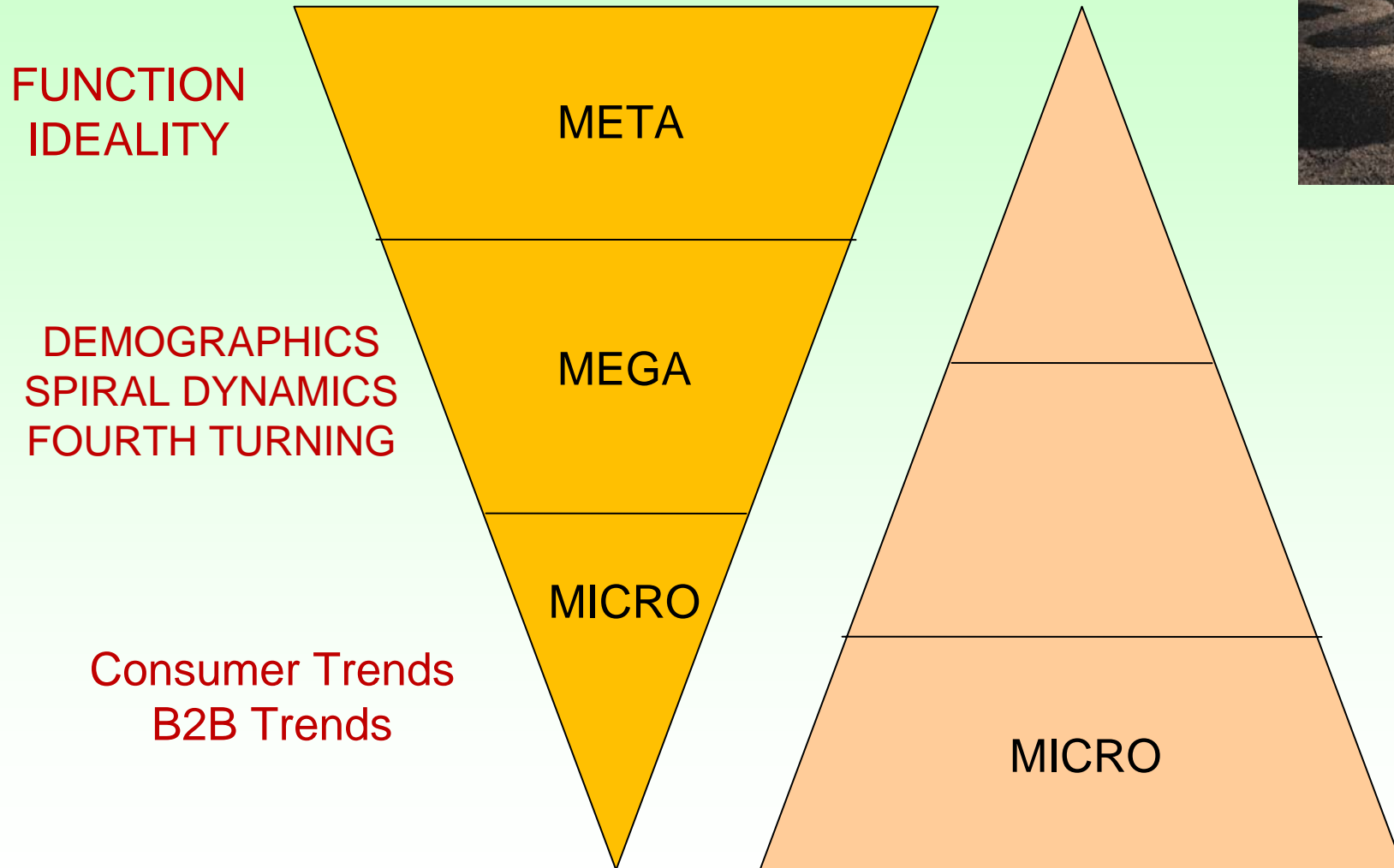
**Voice
Of The
Customer**



**Voice
Of The
System**



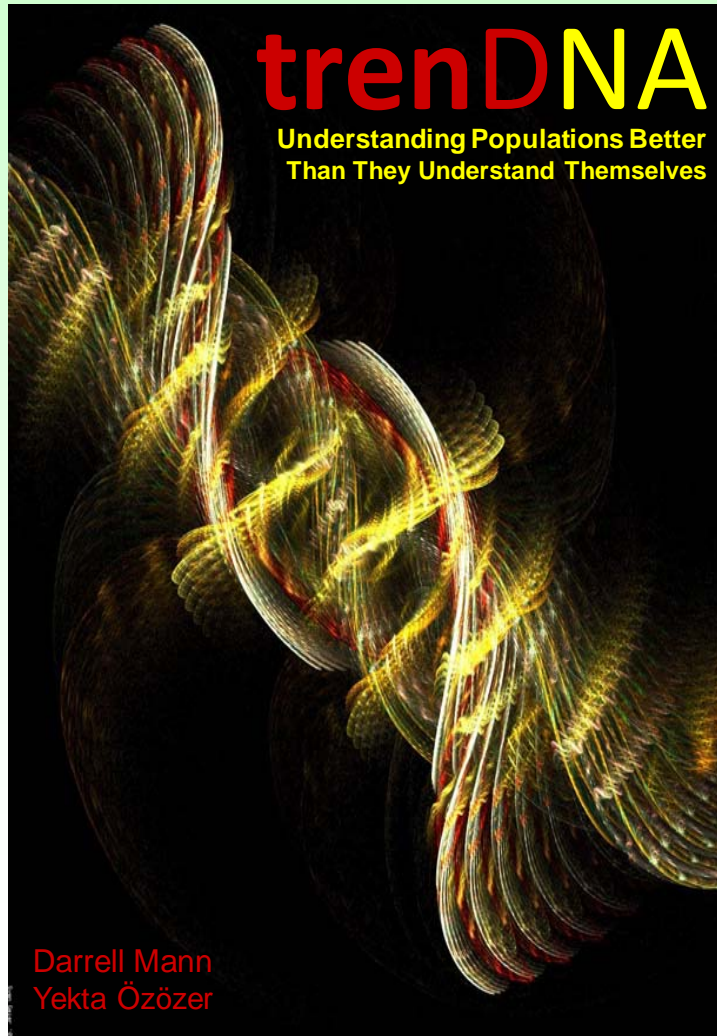
Maps Of The World



Identifies CONTRADICTION Solves it



www.systematic-innovation.com



darrell.mann@systematic-innovation.com