

## Learning from the past: A listing of past literature related to Decision Making

### Introduction

The Society of Organisational Learning in the UK (SoL UK) brought together a number of academics, business consultants and managers to discuss the topic of decision making in institutions at the London School of Economics (LSE).

The aim of the session was to find ways of

### ***Learning how to improve and accelerate team decisions in institutions***

This document forms the first basis of a map of past literature. It is nothing more than an attempt to put the literature in an ordered sequence so that the various threads can later be untangled.

If you believe any key references are missing insert a row by way of the “Table” button on the above menu and insert. Rename the document as version 1 or later and resubmit.

Roy Woodhead

Oxford Brookes University

Oxford

Email: [rwoodhead@brookes.ac.uk](mailto:rwoodhead@brookes.ac.uk)

Tel: 01865 483711

## Chronology

Year	Description
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Throughout history people have consulted elders. Here we see the role of experience and credibility playing a role in the act of decision making.

3000 BCE	<b>I Ching in China</b>
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Provided divine insights and evaluation of a situation as well as potential risks and opportunities

Circa 360 BCE	<b>Plato</b>
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Plato publishes a book named "The Republic". In this book he makes the assertion that the conceptualisation of ideal forms becomes the guiding logic for humans. It is the pursuit of the perfect square that enables us to look at the attempts of craftsmen and argue one of their attempts is better or worse than another attempt. As such, an idealised view becomes a reference point from which we judge.

In this book we learn of Socrates and how he asked one of Meno's slaves to solve a geometrical problem for which he had had no way of knowing how to. The slave solved the problem and Socrates argued learning was the act of remembering from previous lives (i.e. he believed in reincarnation)

A key section of the Republic also deals with the story of the Cave. Slaves are tethered in a cave and can only see shadows on a wall cast by people walking past the entrance. The slaves mistakenly believe the shadows are reality. Socrates then asks what would happen if we took one slave to the entrance and showed him reality. Furthermore, what would the others think when he returned and told them the shadows were not reality. Here he uses the allegory of the cave to show us the way to episteme is through 'reason'.

This will later form the foundation of rationalist approaches to decision making. Techniques such as Bayesian logic and decision trees are 'idealised' representations of how we should make decisions based on our stated preferences. As such the location of 'ideal decision making' is not inside the act of humans making decisions but exists in a conceptual world.

384 – 322 BCE	<b>Aristotle</b>
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In Ancient Athens people had to defend themselves in court and so there was a market for the advice and teachings of the Sophists. These experts would teach people how to win arguments with tricks and so divert the search for truth. They used a number of tactics as Aristotle described in "De Sophisticis Elenchis". Here are a few, that later became known as 'fallacies'. They are simply tactics used to win arguments based on rhetoric rather than substantial truth.

**Affirming the Consequent:** 'if A then B' is used to affirm 'if B then A'

For example, if the stock market is losing value then investors put their money into property. As the current value of the property market is rising then the stock market must be losing value. The error in such thinking is that it excludes the possibility of both the stock market and the property market having concurrent growth in financial value.

**Reification:** "We listened to the City and made decisions on that basis". The 'city' is used to win an argument by treating it as a person. As a city does not exist in a personified way, what it says cannot argue or be argued against.

**Non-Sequiter:** Such an argument ends with conclusions that do not

follow from the preceding statements. For example, the sun shined all day and so we felt lucky.

**Ad hominem:** These are arguments aimed at a personal level in which a charge is made that seeks to cut the ground from under the other person as was the case in the McCarthy Witch hunts in the USA during the 1950s. In that period one only had to be accused of being a communist with the result that no other line of argument was listened to. This may also affect societies where cultural differences such as 'class' limit the economic mobility of certain individuals.

**Straw man arguments:** In this line of attack an unsympathetic view of the opponent is established in order to destroy credibility. For example, Mr X couldn't organise a drinking session in a brewery therefore why should we accept his advice.

**Begging the question:** This tactic revolves around statements that beg questions rather than search for truth. For example, we might say, "As an intelligent man, I'm sure you understand why I am right?", and so encourage you to justify your own intelligence rather than question whether the person is right or not.

**Appeal to authority:** Here an expert is used to discredit an opposing view. For example, many early aviators had to counter the argument "If God had intended us to fly he would have given us wings".

There are many more fallacies used by debaters to distract us from the search for true understanding. The leader must avoid being diverted and use the search for truth as his or her guide.

Aristotle challenged Plato's views and argued the pursuit of perfect ideals was nonsense. He used the case of a cripple and asked whether the cripple should aim to become a 'perfect cripple'

Aristotle had a 'joined up' theory of everything (Philosophers today talk of this as a synthetic view). This would later become the basis of a systemic view.

Source: Woodhead R. & McCuish J. (2002) Achieving Results: How to create value. London: Thomas Telford Ltd.

Circa 620  
BCE to 5  
BCE

### **Sophists and Rhetoric**

Group of people who taught techniques to win argument. Socrates and Plato fought sophism as it was concerned with winning an argument rather than finding a truth.

They were relativists and as such argued truth/good was relative to the individual. Such arguments end in 'individualism' and in terms of how to make 'just' decisions result in either stalemate or power overriding the hopes of others.

From the word 'sophia' meaning wisdom; Protagoras regarded as first sophist. Originally used to confer a compliment but later (circa 5 BCE) used by people teaching skills to win arguments and debates especially in lawsuits that eventually led to a decline in respect for such teachers.

In the Roman empire a similar school emerged that took fees to teach the skills of rhetoric

Source: <http://en.wikipedia.org/wiki/Sophist>

356 – 323  
BCE

### **Alexander the Great, King of Macedon, pupil of Aristotle**

Consulted oracles and fortune tellers before battles about the potential

outcomes. Note, this era had no consideration of how good decisions were made. They focused on likelihood of outcome only.

8BCE – 393  
CE

### **The Oracle of Delphi**

Pythia was a priestess who gave prophesies inspired by Apollo and delivered her visions out of a frenzied state induced by vapours. Pythia was derived from Pytho which was the original name for Delphi.

People would pay money to learn of her visions.

Source: <http://en.wikipedia.org/wiki/Pythia>

Written in  
mid 1500s  
but  
unpublished  
until 1663

### **Gerolamo Cardano**

Wrote *Liber de Ludo Aleae* (Book on games of chance) and the start of what would later become probability and utility theory.

1555

### **Nostradamus**

Nostradamus publishes his predictions of the future in the form of 100 quatrains. There was still a dominant view that life was predetermined. Fate was something the individual had to accept and in so doing did not really take responsibility for the methods of decision making. Good or bad outcomes were a product of fate.

1590-1613

### **William Shakespeare**

Plays that allow us to see decisions made, how they turn out and reflect on lessons learned if we are to avoid or copy in similar situations. It could be argued that theatre was a means of allowing others to learn how decisions were made and links consequences into them.

1610

### **Galileo Galilei**

Galileo wrote "Sidereus Nuncius" which translates in English to "The Sidereal messenger" but is most commonly referred to as the "Starry Messenger". With a telescope he saw far more stars than had ever been viewed before and made the realisation that the Earth revolved around the sun (heliocentric universe) and this had major implication for the Church as they had promoted the Aristotelian view of a geocentric universe.

Galileo's life and work marks the tipping point which would lead to the Renaissance (rebirth of man) and the erosion of the grip superstition had on human decision making. His work paved the way for Descartes, Bacon and others to develop a Natural Philosophy which would name "Science" in the late 1800s.

Copernicus, Bruno and Galileo mark the start of a rebirth of mankind that became known as the Renaissance. It was about man escaping from the view God had predetermined everything and we were subjects of His will.

There is also a story about Aristotle's book of laughter surfacing in which man laughed at the misfortune God had caused. This was supposedly a trigger for man's ascent from a subservient relationship to the will of God. It was the subject of a book by Umberto titled "The name of the rose"

1620

### **Francis Bacon writes *Novum Organum***

Expose hindrances to understanding based on human nature. Provide the basis of methodological enquiry which later became the scientific method.

**Bacon's 4 Idols Source:** <http://www.sirbacon.org/links/4idols.htm>

**Idols of the Tribe:** Deceptive beliefs inherent in our thinking; e.g. the

tendency to exaggerate and distort

**Idols of the Cave:** Refers to Plato's story of the Cave. Thoughts roam in the mind which is analogically seen as a cave. As thoughts roam they are modified by temperament, education, habit, environment, and accident. Someone who specialises thus sees the world through their own perceptions and biases like the slaves who saw the shadows on the wall of Plato's cave.

**Idols of the Marketplace:** errors resulting from the transfer of thoughts into words and the way meanings attached to words obscure the original thoughts.

**Idols of the Theatre:** errors due to sophistry and falsehoods built up in fields such as theology, philosophy, and science that are subsequently defended by learned groups and because of that are accepted without question by the masses.

1637

**Descartes**

Wrote "Discourse on Method" in which he also wrote "*Je pense, donc je suis*" which translates to "I think therefore I am". This marked a key paradigm shift as prior to this humans saw themselves in a subservient relationship to nature and God. Descartes brought an attitude of mind in which humans could detach their thinking and from a conceptual perspective contemplate changing nature and becoming masters of their own fate. It is from this attitude of mind that rational approaches to decision making later arise.

1732

**Benjamin Franklin** develops a simple approach to evaluating pros and cons as well as costs and benefits

He wrote "Query, Whether it is worth a Rational Man's While to forego the Pleasure arising from the present Luxury of the Age in Eating and Drinking and artful Cookery, studying to gratify the Appetite for the Sake of enjoying a healthy Old Age, a Sound Mind and a Sound Body, which are the Advantages reasonably to be expected from a more simple and temperate Diet."

Source: <http://www.ushistory.org/franklin/philadelphia/aps.htm>

1738

**Daniel Bernoulli**

Published a paper allegedly written much earlier on probability and expectation known as the "St Petersburg Paradox" which reveals a reducing gap between the utility we achieve with respect to the size investment and the possible payoff as a proportion of the amount of wealth we have to gamble with. In other words we are more willing to gamble a smaller proportion of our wealth than a larger proportion even if both gambles have the same level of risk. So there is a gap between a mathematical view and an intuitive view of decision making.

We must see here the conflict between a Platonic view of idealised decision making and how people actually make decisions. The idealised view of 'rational man' would have to spend many years trying to develop techniques to overcome the fact, by and large, humans don't make decisions in a rational way. This would later become important to the field of Artificial Intelligence (see also Turin Test--Saygin, A.P., Cicekli, I. and Akman, V. (2000), 'Turing Test: 50 Years Later', *Minds and Machines* 10(4): 463-518.)

1814

**Laplace**

"Essai Philosophique sur les Probabilités" (Philosophical Essay on Probability, 1814

Insufficient Reason Criterion states if a rational decision capable of

assigning probabilities to an outcome does not do so then there is insufficient reason for the decision maker to suggest one outcome is more likely than another and so all outcomes being considered must have been viewed as equally likely.

This marks the start of the concept of 'perfect knowledge' which means the decision maker knows everything necessary in order to make a great decision. So if we were trading I would know the maximum you would be willing to pay. However, in real life information is not made fully available so that the actors have power.

1763

**Reverend Thomas Bayes**

Bayes, T. (1763) An Essay towards solving a problem of the doctrine of choice. Philosophical Transactions. Royal Society, 53, 370-418

Theory of probability that takes into account the fact that we refine our views of likelihood as more information becomes available.

(If you have little knowledge of Bayes Theorem the following website is one my students find very useful:

<http://yudkowsky.net/bayes/bayes.html>

1810

**Gauss**

Gauss uses the 'normal curve' applied by Laplace in 1783 to describe the 'distribution of errors'. This marks the birth of statistics.

1935

**Kurt Lewin**

Lewin's field theory (source: <http://www.infed.org/thinkers/et-lewin.htm>)

Wrote "Dynamic Theory of Personality" which argued the way people are can change and is not fixed. This opens the door to learning how to modify some of the intuitive biases humans have and which affect the decisions they make.

Lewin, K. (1935) *A dynamic theory of personality*. New York: McGraw-Hill.

1936

Lewin, K. (1936) *Principles of topological psychology*. New York: McGraw-Hill.

1938

**The term Operations Research coined**

Source:

[http://www.orsoc.org.uk/orshop/\(5xt0tkfmutrlw2ewuuv5id45\)/orcontent.aspx?inc=article\\_news\\_orclub.htm](http://www.orsoc.org.uk/orshop/(5xt0tkfmutrlw2ewuuv5id45)/orcontent.aspx?inc=article_news_orclub.htm)

1938

Lewin, K. and Lippitt, R. (1938) 'An experimental approach to the study of autocracy and democracy. A preliminary note', *Sociometry* 1: 292-300.

1939

Lewin, K., Lippitt, R. and White, R. (1939) 'Patterns of aggressive behaviour in experimentally created "social climates"', *Journal of Social Psychology* 10: 271-99.

1944

**Von Neumann and Morgenstern**

Game theory brings utility theory to the fore. This book kick started much of what has happened in the Decision Sciences and is a key contribution to the field.

Von Neumann, J., and Morgenstern, O. (1944) *Theory of Games and*

Economic Behaviour. Princeton, NJ: Princeton University Press.

1944

### **Kurt Lewin**

Starts Research Center for Group Dynamics at MIT. This would later yield Organisational learning and provide a home for what became the Society for Organizational Learning (SoL)

Lewin was also instrumental in getting funding from the Office of Naval Research to set up what would later become The National Training Laboratories

### **About Lewin's departure from traditional research**

Field theory was a key contribution by Lewin. Often called "Force Field Theory" in which forces for and against change are represented. He argues behaviour is a product of the multitude of forces at work.

### **Group dynamics**

Two key ideas emerged out of field theory that is crucial to an appreciation of group process: interdependence of fate, and task interdependence.

**Democracy and groups:** Similarity between the work of Kurt Lewin and that of John Dewey. Dewey was a pragmatist and they believe 'truth' is in action not in theory ( the proof of the pudding is in its eating so to speak)

### **'T' groups, facilitation and experience**

In the summer of 1946 Kurt Lewin and others from the Research Center for Group Dynamics started leadership and group dynamics training for the Connecticut State Interracial Commission. Task groups operating independently of the main organisational design would become much more popular in later years.

**Feedback.** Lewin borrowed the term from electrical engineering and applied it to the behavioural sciences. Here he made the link between action, assumption, outcome and learning.

### **Action research**

Kurt Lewin generally credited as the person who coined the term 'action research'.

1945

Lewin, K. and Grabbe, P. (1945) 'Conduct, knowledge and acceptance of new values' Journal of Social Issues 2.

1946

Tavistock Institute founded in London

1948

Operations Research Society founded in London.

1948

Lewin, K. (1948) Resolving social conflicts; selected papers on group dynamics. Gertrude W. Lewin (ed.). New York: Harper & Row, 1948.

1949

Correy, S. M. (1949) 'Action research, fundamental research and educational practices', Teachers College Record 50: 509-14.

1949

Deutch, M. (1949) 'A theory of cooperation and competition', Human Relations 2: 129-52

1949

Lippitt, R. (1949) *Training in Community Relations*, New York: Harper and Row.

1950s

MAUT

Multi Attribute Utility Theory referred to but no cited paper

- 1950s **Maurice Allias**  
Challenged Independence axiom by showing utility would select the wrong pair of choices; utility theory did not distinguish between human assessment of probability and value and repeatable objective probability. He started the French school of choice and risk which focuses on concordance and discordance with the objectives being pursued.
- 1951 Lewin, K. (1951) Field theory in social science; selected theoretical papers. D. Cartwright (ed.). New York: Harper & Row.
- 1954 **Ward Edwards**  
At the Social Sciences Research Institute at the University of Southern California brought forward a normative view of decision making which sought to model how people actually make decisions given many are not rational in practice.  
Normative views are about what we 'ought' to do.
- 1954 **Von Bertalanffy**  
Von Bertalanffy, L.(1954) General System Theory: Foundations, Development, Applications. New York: George Braziller Inc.  
This book is seen as the starting point for systems theory.
- 1954 **Savage**  
Savage published "The Foundations of Statistics" which paved the way for the use of statistics in the consideration of business type problems.  
Savage, L.J. (1954) The foundations of Statistics. New York: Wiley.
- 1954 **Luce and Raiffa**  
Book called "Games and Decisions" synthesizes ten years of research in game theory and decision trees as modelling tools.
- 1956 **Whyte**  
Whyte, W.H. (1956) The Organisation Man. New York: Simon and Schuster  
  
(I am not sure but seem to remember William Whyte was a doctoral student of Lewin's and later supervised Chris Argyris—need to check though)
- 1956 **Miller**  
Miller, G.A. (1956) The magic number seven plus or minus two: Some limits on our capacity for processing information, Psychological Review, 63, 81-97  
An important paper which alludes to the bounded capacity of the human mind. It argued we can only focus on 7 key concepts,  $\pm 2$ , at any one time.
- 1956 **Jay Forrester**  
Forrester, working with engineering students and wanting to find a better way to teach calculus, develops the concept of feedback loops in closed systems into an approach that models the way variables change dynamically and coins the name "System Dynamics" at MIT. This led to software such as I-Think and Vensim  
This would later filter its way into the concept of Organizational learning though one of his students, Peter Senge.
- 1956 Kariel, H. S. (1956) 'Democracy unlimited. Kurt Lewin's field theory', *American Journal of Sociology* 62: 280-89.
- 1957 **Simon**  
Simon published results that show humans have 'bounded rationality'. The

way humans have evolved means we are incapable of knowing our goals, or even the utility we expect, in an explicit and reliable way. Because of this agents in an organisation may be working to different goals evidenced by variant behaviour.

### **Bounded Rationality**

In 1957, Simon proposed the notion of Bounded Rationality. We have limited cognitive capacities and so bound our rationality.

Source: <http://ai.eecs.umich.edu/cogarch0/common/theory/boundrat.html>

1958

### **Simon & satisficing**

He argued some decision makers do not seek to maximise but find some satisfactory position. They do enough to keep everyone happy so to speak.

In the same year Simon wrote a book with March titled “organizations” which gave birth to the “Behavioural decision Research” school. The focus was not so much on rational methods as how people engaged with those methods.

March J. G. and Simon H. A. (1958). Organizations, New York, N.Y., John Wiley & Sons.

1958

### **William Schutz**

Looks at group dynamics from three key perspectives; inclusion, control and affection. These were seen as the basis for a theory of group behaviour of which decision making was an integral context.

Schutz, W. 1958. *FIRO: A Three-Dimensional Theory of Interpersonal Behavior*. New York: Holt, Rinehart & Winston. —1966. *The Interpersonal Underworld: FIRO- A Three Dimensional Theory of Interpersonal Behavior*. Palo Alto, California: Science and Behavior Books. [ISBN 0-8314-0011-0](#)

1959

### **Lindblom**

Lindblom published a book that suggested decisions are made in an incremental fashion with organisations over a considerable period of time. He argued that during this time period the decision making process is used to gain knowledge and commitment through a prolonged process of exploration and learning.

He argued two approaches may be adopted. A rational comprehensive method he termed the “root” approach and a method of successive but limited comparisons he named the “Branch” approach.

His work would later influence Quinn and Mintzberg.

Lindblom, C.E. (1959) The science of muddling through. Public Administration Review. Vol. 19, Spring, 79-88

1960s

### **RAND Corporation**

Computers used to model data and run simulations

1961

### **Bion**

Wilfred Bion examines group dynamics from a psychoanalytic perspective. He develops the notion of situational leadership.

The Tavistock Institute continue to develop his theories to day

Bion, W. R. 1961. Experiences in Groups: And Other Papers. Tavistock.

Reprinted, 1989 Routledge. ISBN 0415040205

1961

**Raiffa & Robert Schlaifer**

Wrote “Applied Statistical Decision Theory” was a key turning point and one that promoted the use of Bayesian methods for decision analysis

Raiffa, H. and Schlaifer, R. (1961), Applied Statistical Decision Theory, Cambridge, MA: The MIT Press.

1963

**Cyert and March**

Cyert & March develop ‘descriptive’ theories of decision making. They look to explain what happens rather than what should happen and this marks a shift away from normative theories.

Cyert, R. & March, J. (1963) A behavioural theory of the firm. Englewood Cliffs, NJ: Prentice Hall

1964

Bradford, L. P., Gibb, J. R., Benn, K. D. (1964). T Group theory and laboratory method, New York: John Wiley.

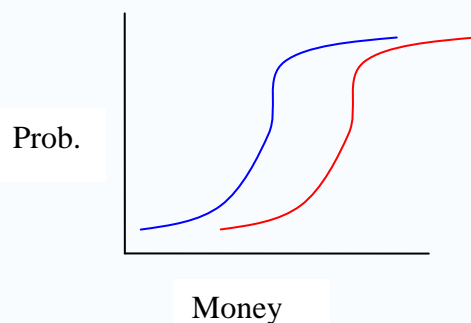
Builds on the earlier work of Lewin

1965

**Ron Howard**

Ronald Howard, Professor in the Department of Engineering-Economic Systems (now the Department of Management Science and Engineering) in the School of Engineering of Stanford University since 1965. previously he was Associate Professor of Electrical Engineering, Associate Professor of Industrial Management, and Associate Director of the Operations Research Center at MIT

Prof Howard starts a decision Analysis research group at Stanford University and coined the name “Strategic Decision Group”. This group began by looking at stochastic dominance.



If we run simulations of possible outcomes then we can plot the cumulative frequency of such potential outcomes. So we don't know exactly what the actual will be but we assume it will be somewhere along the line. The red and blue lines above represent such an insight. We don't know the actual outcome for the blue line but we do assume it will be somewhere along it. Similarly for the red line. Whilst we have no certainty at this stage we can say we'd rather invest in the red line project than the blue line project as for a similar level of risk we get more money. This is basically what stochastic dominance is about.

1965

**Bruce Tuckman** proposes a 4 stage model of group dynamics

Tuckman's model

- *Forming* (being polite to each other)

- *Storming* (dropping the politeness);
- *Norming* (finding shared values);
- *Performing* (working productively).

Tuckman, B. 1965. Developmental sequence in small groups. *Psychological bulletin*, 63, 384-399.

1965

### **Zedeh**

Introduces Fuzzy Logic

Zadeh, L.A. (1965) Fuzzy Sets. *Information and Control*, 8, 338-353

1968

### **Ron Howard**

Howard, (1968) The foundations of Decision Analysis. *IEEE Transactions on Systems, Science and Cybernetics*, SSC-4, 211-19

1968

### **Raiffa**

Professor Raiffa also is a founder of decision analysis, and like Lindley, he explains the material well. The problems tend to be abstract. The text covers the basics (and then some) and is still worthwhile after almost 30 years.

Raiffa, H. (1968) *Decision Analysis*. Reading, MA: Addison-Wesley

<http://faculty.fuqua.duke.edu/daweb/readlist.htm>

1968

Stoner, J.A.F. (1968) Risky and cautious shifts in group decisions: the influence of widely held values. *Journal of Experimental Social Psychology*, 4, 442-59

1969

Marrow, A. J. (1969) *The Practical Theorist. : The Life and Work of Kurt Lewin*, New York: Basic Books

1969

### **Polyani**

Philosopher of science, Michael Polyani publishes a book with talked of 'tactic knowledge'. This marks a resurgence of the role intuition plays in decision making.

Polyani, M. (1969) *Knowing and Being*. Chicago: University of Chicago Press

1971

### **Allison**

Allison published a book based on his doctoral studies. He examined the Cuban Missile Crisis and found each story is a frame of reality that can be told in isolation. By combining all three frames, Allison provides a closer approximation to the truth.

The three frames were:

- i) A rational policy model
- ii) An organisational process model.
- iii) A governmental politics model.

What is significant about this work is that it requires us to interpret situations using more than one lens or framework. If we accept that it is very difficult to be aware of the paradigms that influence the priorities we assign to data then we must look for methods that bring in other participants holding different perspectives.

Allison, Graham T.; 1971. *Essence of Decision: Explaining the Cuban*

Missile Crisis. Little, Brown and Company, Boston, Massachusetts, USA

1971

**Churchman,**

Churchman brought the study of systems into the decision research agenda.

Churchman, C.W. (1971) *The design of Inquiring Systems*. New York: Basic Books.

1971

**Edward de Bono** brought the concept of "lateral thinking". This was a challenge to the linear style thinking associated with syllogistic argument.

De Bono, E. (1971) *Lateral Thinking for Management: a handbook of creativity*. American Management Association

1971

Fraser, C., Gouge, C. and Billig, M. (1971) Risky shifts, cautious shifts and group polarization. *European Journal of Social Psychology*, 1, 7-30

1972

**Janis** looks at how key strategic US decisions were made that led to poor outcomes such as Bay of Pigs invasion of Cuba in 1961

Janis (1972) studied how US decisions that lead to unsatisfactory outcomes were conducted and identified five characteristics they had in common:

1. The group making the decision was very cohesive. Pressure is put on dissenters to conform to the consensus view. This brings forth an illusion of unanimity and correctness.
2. The group is insulated from external sources of information.
3. The group rarely searched systematically through alternative policy options and assess their advantages and disadvantages. In large part this is because there is not felt to be a need to search for alternatives; they know what the best thing to do is and are in the act of committing to that view. Furthermore there is often a negative stereotyping of 'outgroups' and so their views are not given full acknowledgement.
4. The group members are experiencing stress usually caused by the need to make a decision urgently
5. The group is dominated by a very directive leader. In this situation the leader is far from neutral and advocates his or her views.

This collection of characteristics leads to what Janis named "Group Think". Brown (1998) sums it up as, "The picture Janis (1972) paints, therefore, is of a tightly knit group, isolated from outside influences, converging rapidly onto a normatively 'correct' point of view and thereafter being convinced both of its own rectitude and of the inferiority of all other competing opinions (or groups)." This is almost exactly the opposite of what we'd expect to see in good decision making episodes.

Flowers (1977) found that leadership styles were a way to reduce groupthink effects. She found that open, non directive leaders were better than closed, directive task oriented leaders and that the effect of assumed team cohesion had little effect compared to leadership style

Janis, I.L. (1972) "Victims of Groupthink," Boston: Houghton Mifflin Company

1972

**Savage**

Savage publishes a book that links subjective probabilities to decision making.

Savage, L.J. (1972) *The foundations of Statistics*, New York: Dover Publications

1973 **Zadeh** built on Bertrand Russel's "Theory of Vagueness" Introduction of Fuzzy Logic and the birth of fuzzy deision making.

Zadeh.L.A. (1973) Outline of a new approach to the analysis of complex systems and decisions process. *IEEE Transactions on Systems, Man, and Cybernetics*, 3(1):28-44, January 1973.

1973 Semin, G. and Glendon, A.I. (1973) Polarization and the established group. *British Journal of Social and Clinical Psychology*, 12, 113-21

1974 **Argyris and Schön**

Landmark statement of 'double-loop' learning' and distinction between espoused theory and theory-in-action.

Model 1

- Be in control
- Win do not lose
- Suppress negative feelings
- Emphasise rationality

Model 2

- Valid information
- Free & Informed Choice
- Internal commitment

Key to their work is that they see decision making as a learning process. This brings a pragmatic focus to the consideration of decision making. That is, truth is not within the decision making algorithm but resides in action, in reality. Peter Senge would later popularise key theories from their work in "The Fifth Discipline".

Argyris, M. and Schön, D. (1974) *Theory in Practice. Increasing professional effectiveness*, San Francisco: Jossey-Bass.

1974 Fraser, C. (1974) Determinants of individual and group decisions involving risks. Final report to the Social Science Research Council. London: SSRC

1976 **Mintzberg et al**

Mintzberg, Raisinghani and Théorêt published a paper that portryaed a messy picture of what really happens within organisational decision making.

Mintzberg, H., Raisinghani, D. and Théorêt, A. (1976) The Structure of "Unstructured" Decision Processes. *Administrative Science Quarterly*, June, 246-275

1976 **Keeney and Raiffa**

Keeney, R.L. and Raiffa, H. (1976) *Decisions with Multiple Objectives: Preferences and Value Trade-offs*, Wiley, New York. Reprinted, Cambridge University Press, 1993.

Source: <http://www.communities.gov.uk/index.asp?id=1142272>

1976 Myers, D.G. and Lamm, H. (1976) The group polarization phenomenon. *Psychological Bulletin*, 83, 602-27.

1977 Flowers, M.L. (1977) A laboratory test of some implications of Janis' groupthink hypothesis. *Journal of Personality and social Psychology*, 35,

- 888-96
- 1978 **Saaty**  
Saaty develops Analytical Hierarchy Process which measures the subjective 'difference' between criteria. Essentially is a pair wise comparisons technique that allows us to know which attribute is more important to us than another.
- 1978 Saaty, T. (1978) Modelling Unstructured Decision Problems – the Theory of Analytical Hierarchies. Mathematics and Computers in Simulation, 147-158  
Hall, C.S. and Lindzey, G., 1978. Theories of Personality 3e, New York: John Wiley & Sons.
- 1980 **Quinn**  
Quinn studied decision making processes and found Lindblom's view of the Branch approach was what happened but in a more proactive way. It is because there is a lack of information that the process creeps forward in what Quinn named a "Logical Incrementalism". Lacking clear structure to the decision making process, executives proceed through phased implementation and the testing of solutions as they edge forward.  
Quinn, J.B. (1980) Strategies for Change: Logical Incrementalism. Homewood, IL: Richard D. Irwin
- 1981 **Checkland**  
Peter Checkland moved Operational Research into qualitative research methodologies with his work on "Soft Systems Methodology". His approach shows a clear demarcation between what we believe happens in the real world and how we conceptualise such in an abstract world within our heads and on pieces of paper representing our thoughts  
Checkland, P.B. (1981) Systems Thinking, Systems Practice. Chichester: Wiley
- 1981 **Kepner Tregoe**  
Kepner, Charles H. and Benjamin B. Tregoe. The New Rational Manager. Kepner-Tregoe, 1981  
Brought us a methodological approach to problem solving that searched for root causes. Also packed the methodology as a business concept people would pay to learn.
- 1981 Reid, K. E. (1981) From Character Building to Social Treatment. The history of the use of groups in social work, Westpoint, Conn.: Greenwood Press.
- 1981 **Tversky and Kahneman**  
Tversky and Kahneman challenged 'Prospect Theory' which held that evaluations of value were in relation to a given position; for example the worth of investing £5 to win £6 vs. investing £0.5 to win £1.50.  
  
They showed an emotional bias is at play by giving the following problem (see Baron, 1994, p364-5):  
"Imagine that the U.S. is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimate of the consequences of the programs are as follows:  
Program A: (200 saved)  
Program B: (33.33% chance 600 saved)

In a later episode the subjects were offered the following prognosis for the same scenario

Program A: (400 die)

Program B: (67.33% chance 600 saved)

Spend a few seconds to select which you would choose from the two trials. In the first trial would you choose A or B? What about the second trial, A or B?

The key issue is that they are the same problem. However, what Tversky and Kahneman found was that the concept of saving and the concept of allowing people to die caused many people to vote inconsistently. From this we can again see how humans bring in biases that then call for even more refinements to the rationalist project.

Tversky, A, and Kahneman, D. (1981) The framing of decisions and the psychology of choice. *Science*, 211, 453-458

I

1982

### **Edwards and Newman**

Their book, *Multiattribute Evaluation*, was the first text to set out the SMART procedure. Although SMART is now usually implemented in a slightly different way, the insights about the application process as a whole are still very valuable.

Edwards, W. and Newman, J.R. (1982) *Multiattribute Evaluation*, Sage Publications, Beverly Hills.

<http://www.communities.gov.uk/index.asp?id=1142272>

1982

### **Kahneman, Slovic and Tversky**

Wrote a book that explored how people actually assess risk and developed a heuristic (rule based) approach. Based on laboratory tests & do not take into account social or emotional effects.

Kahneman, D. Slovic, P, Tversky, A, (1982) *Judgement Under Uncertainty: heuristics and biases*. New York: Cambridge University Press

1982

### **Keeney**

Keeney, R.L. (1982) 'Decision analysis: an overview', *Operations Research*, 30, pp.803-37.

A succinct review of multiattribute decision analysis, including models that go beyond the range covered in this manual. Guidance on how to apply decision analysis and references to early applications.

<http://www.communities.gov.uk/index.asp?id=1142272>

1982

Wetherell, M. (1982) Cross-cultural studies of minimal groups: implications for social identity theory of intergroup relations, In Tajfel, H (ed.) *Social Identity and Intergroup Relations*. Cambridge: Cambridge University Press

1982

Cohen, March, and Olsen

Looks at role rules, obligations and myths play in organisations

"Garbage Can" Model [GARBAGE CAN MODEL OF ORGANIZATIONAL CHOICE]:

1. Problems
2. Solutions
3. Choice opportunities

#### 4. Participants

*Cohen, Michael D., James G. March, Johan P. Olsen A Garbage Can Model of Organizational Choice Administrative Science Quarterly, Vol. 17, No. 1. (Mar., 1972), pp. 1-25.[JSTORS] [particularly pp.1-3 & 9-13]*

<http://faculty.washington.edu/krumme/gloss/g.html>

1983

#### **Howard and Matheson**

Since early 1960's, Ron Howard has practiced decision analysis and teaching the principles to students in the Engineering-Economic Systems Department at Stanford University.

Ronald A. Howard and James Matheson (eds.) (1983) *The Principles and Applications of Decision Analysis* (2 volumes). Palo Alto, CA: Strategic Decisions Group.

<http://faculty.fuqua.duke.edu/daweb/readlist.htm>

1984

#### **Wright**

Wright publishes a book that considers the behavioural aspects of decision making.

Wright, G. (1984) *Behavioural Decision theory: An introduction*. Beverly Hills, CA: Sage Publications

1984

#### **Kolb**

Brings us the notion of a learning taxonomy: From memory it is:

1. Unconscious incompetence (a baby does not know it can't drive a car)
2. Conscious incompetence ( a youth knows they can't drive a car)
3. Conscious competence (We know how to drive but have to think of every manoeuvre consciously)
4. Unconscious competence (we drive from A to B but can't remember looking in mirrors etc)

Kolb, D. A. (1984) *Experiential Learning. Experience as the source of learning and development*, Englewood Cliffs, NJ.: Prentice-Hall.

1984

#### **Complexity Theory**

The Santa Fe Institute begins independent research for multidisciplinary collaborations in the physical, biological, computational, and social sciences. Their focus is on understanding complex adaptive systems and they view it as critical to addressing key environmental, technological, biological, economic, and political challenges.

<http://www.santafe.edu/indexAboutsf.php>

The complexity group at LSE would later take some of these theories and merge them with qualitative research methods from an action-research paradigm

<http://www.psych.lse.ac.uk/complexity/>

1985

**Argyris**

Chris Argyris publishes a book on Action Science which calls for the study of decision making from within the forum in which decisions are made and with the researcher seeing themselves as moderating variables. It marks a key difference from other approaches to research which seek to observe others make decisions as if the presence of researchers has no effect on the way people go about making decisions.

Argyris, C. (1985) Action Science, San Francisco: Jossey-Bass

1985

**Schien**

Edgar Schien published “Organizational Culture and Leadership” in which he argued culture can operate on at least three levels in organisational decision making:

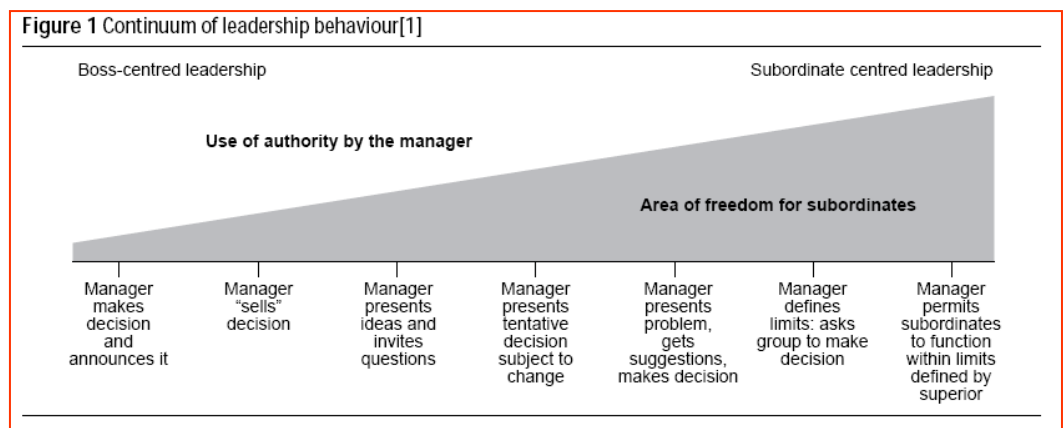
- Behaviour (artefactual level): the visible stuff
- Values and principles: those factors upon which behaviour is based.
- Underlying Assumptions: those factors upon which both values and behaviour are based

Schien, E. (1985) Organizational Culture and Leadership” San Francisco: Jossey-Bass

1985

**Tannenbaum, & Schmidt**

Tannenbaum, R., Schmidt WH (1985), How to choose a leadership pattern. Harvard Business Review 36/2 95-101.



Source of graphic unknown

1985

**Perkins**

Perkins examined fallacies in arguments by asking two critics to criticise arguments they had been involved with under experimental conditions. Essentially the errors stemmed from failure to search for evidence against initial possibilities.. He developed a framework called “Sparse Situation

Modelling” and found the following major categories:

**Contrary Consequence:** The person arguing would take a different line of argument that led to an opposite conclusion.

**Counter Example:** The arguer neglects a counter example and continues with line of argument they psychologically committed to.

**External Factor:** The arguer neglects to consider a reason why a generalisation they made might not be true.

**Neglected Critical Distinction:** The arguer neglects a distinction that might weaken a general statement.

Perkins also found errors relating to the logic used:

**Disconnection:** The arguer failed to link a conclusion to the premises and arguments.

**Consistent Quantification:** A quantitative argument was stated as a rebuttal of another argument but was really consistent with it.

**Contradiction:** The arguer fails to establish the case for contradiction as to do so would undermine their position.

- Perkins, D.N. (1985) The nature of shortcomings in everyday reasoning. Unpublished manuscript. Harvard University. Graduate School of Education, Cambridge, MA. In Baron (1994, p 173-5)
- 1986 Linda K. Trevino (1986) “Ethical Decision Making in Organizations: A Person-Situation Interactionist Model,” *Academy of Management Review*, Vol. 11, March, 601-617.
- 1986 **Von Winterfeldt and Edwards**  
Von Winterfeldt, D. and Edwards, W. (1986) *Decision Analysis and Behavioural Research*, Cambridge University Press, Cambridge.  
<http://www.communities.gov.uk/index.asp?id=1142272>
- 1986 Carr, W. and Kemmis, S. (1986) *Becoming Critical. Education, knowledge and action research*, Lewes: Falmer Press.
- 1987 Winter, R. (1987) *Action-Research and the Nature of Social Inquiry. Professional innovation and educational work*, Aldershot: Avebury.
- 1987 Peck, M.S. 1987. *The Different Drum: Community-Making and Peace*. New York: Simon and Schuster. [ISBN 0684848589](https://www.amazon.co.uk/dp/0684848589)
- 1987 Binmore, K. (1987-8) Modelling rational players, Parts I,II, *Economics and Philosophy* 3, 179-214; 4, 9-55. In Bacharach and Hurley (1991) p3
- 1987 **Hogarth**  
Robin M. Hogarth (1987) *Judgment and Choice*, 2nd ed. New York: Wiley. An introduction to behavioral decision analysis from psychological perspective.  
<http://faculty.fuqua.duke.edu/daweb/readlist.htm>
- 1988 Binmore, K. (1988) *Game theory and the social contract: Mark II*, Manuscript, London School of Economics.
- 1988 Kemmis, S. and McTaggart, R. (1988) *The Action Research Planner*, Geelong, Victoria: Deakin University Press.
- 1988 Brown, R. (1988) *Group Processes. Dynamics within and between groups*, Oxford: Blackwell.

- 1988 **French**  
French, S. (1988) *Decision Theory: an Introduction to the Mathematics of Rationality*, Ellis Horwood, Chichester.  
<http://www.communities.gov.uk/index.asp?id=1142272>
- 1990 **Mintzberg**  
Mintzberg published a review of strategy literature and categorised the different school into ten categories:  
**Prescriptive schools**  
**The Design School:** Strategy formulation is a conceptual process that starts with where we are today and where we want to be and how will we get there.  
**Planning School:** Strategy is a formal and systematic process and is enacted as a series of regular steps and stages and strategy emerges and is then implemented  
**The Positioning School:** Strategy is in response to industry and competitor positions.  
**Descriptive schools**  
**The Entrepreneurial school:** Strategy is a visionary process.  
The Cognitive School: Strategy is the cognitive processes that form in the minds of executives.  
**The Learning School:** Strategy is an emergent process and environmental dynamism and complexity require an ability to learn and adapt.  
**The Political School:** Strategy is a process guided by power.  
The Cultural School: Strategy is a product of collective behaviour based on shared values and beliefs.  
**The Environmental School:** Strategy is a passive process in which external pressures cause the need for internal adaptations.  
**The Configuration School:** Strategy is about picking the best bits from other schools and applying them to suit the situation.  
Mintzberg, H. (1990) *Strategy Formulation: Schools of Thought in Perspectives on Strategic Management* (Ed. Fredricksen, J.W.) New York: Harper Business, 111-118
- 1991 **Jones**  
Thomas M. Jones (1991) "Ethical Decision Making for Individuals in Organizations: An Issue Contingent Model," *Academy of Management Review*, Vol. 16, February, 366-395.
- 1991 **Hofstede**  
Brought the role of culture to the fore in decision making.  
  
Hofstede, G. *Cultures and Organizations: Software of the mind*. London: McGraw-Hill
- 1991 **OCL**  
The Center for Organizational Learning (OLC) at MIT established. This would last for only four years before it would begin to evolve into what is today known as Sol; the Society for Organisational learning.  
At the core of SoL's earlier work was consideration of the impediments to

decision making through implementation. Building on the work of scholars such as Chris Argyris and Donald Schön, this community started to view decision making from a new direction and in so doing changed the focus on how an outcome was viewed.

1991 Bacharach, M., and Hurley, S. (Eds.) (1991) Foundations of Decision Theory, oxford: Basil Blackwell Ltd

1991 **Nagel**

Wrote the paper arguing for Win-Win approaches to decision making at policy level

Nagel, S. (1991) Research approaches and super-optimizing Analysis. In Public Administration Theory Network, ways of knowing: A multiple perspective approach to public administration theory and research (March 1991)

(--I can't find where I got this from; another reference below)

See also: Nagel S. (2001) Handbook of Win-Win Policy Analysis. Nova Science Publishers, Inc., New York.

1991 Elliott, J. (1991) Action Research for Educational Change, Buckingham: Open University Press.

1992 Bogdan, R. C. and Biklen, S. K. (1992) Qualitative Research for Education, Boston: Allyn and Bacon.

1992 **Keeney**

Keeney, R.L. (1992) *Value-Focused Thinking: a Path to Creative Decision Making*, Harvard University Press, Cambridge, Massachusetts.

<http://www.communities.gov.uk/index.asp?id=1142272>

1993 **Nagel**

Nagel, S. (1993) Policy Analysis Methods and Super-Optimum Solutions. New York: Nova Sciences Publishers Inc.

1994 **Senge**

Senge, P. et. al. (1994) The Fifth Discipline Fieldbook: Strategies and Tools for Building a Learning Organization

This book made key theories developed by Chris Argyris and Donald Schön accessible to a wider audience.

It marks a key point in our project for it moves the consideration of decision making quality into the workplace.

1994 **Baron**

A philosopher's approach to the study of decision making.

Baron (1994) Thinking and deciding. Cambridge: Cambridge University Press

1994 Gastil, J. (1994) 'A definition and illustration of democratic leadership' Human Relations 47/8: 953-75. Reprinted in K. Grint (ed.) (1997) Leadership, Oxford: Oxford University Press.

1994 Edwards and Barron

Edwards, W., and Barron, F. H. (1994) 'SMARTS and SMARTER: Improved

- simple methods for multiattribute utility measurement', *Organizational Behavior and Human Decision Processes*, 60, 306-325.  
<http://www.communities.gov.uk/index.asp?id=1142272>
- 1995 Yalom, I. D. (1995) *The Theory and Practice of Group Psychotherapy* 4e, New York: Basic Books.
- Smith, M. K. (2001) 'Kurt Lewin, groups, experiential learning and action research', the encyclopaedia of informal education,  
<http://www.infed.org/thinkers/et-lewin.htm>
- 1995 LSE Complexity group founded
- 1995 Johnson, D. W. and Johnson, R. T. (1995) 'Positive interdependence: key to effective cooperation' in R. Hertz-Lazarowitz and N. Miller (eds.) *Interaction in Cooperative Groups. The theoretical anatomy of group learning*, Cambridge: Cambridge University Press.
- 1995 **Daniel Goleman**  
Emotional Intelligence brought into the consideration of how preferences and values play a role in the decision making of individuals and subsequently the organisations in which they work.
- Goleman, D. (1995) *Why can it matter more than IQ*, London: Bloomsbury
- 1995 Schein, E (1995) 'Kurt Lewin's Change Theory in the Field and in the Classroom: Notes Toward a Model of Managed Learning', *Systems Practice*,  
<http://www.solonline.org/res/wp/10006.html>
- 1996 Webb, G. (1996) 'Becoming critical of action research for development' in O. Zuber-Skerritt (ed.) *New Directions in Action Research*, London: Falmer Press.
- 1996 **Shapira**  
Moved the behaviourist agenda forward.  
a) Behavioural decision theory for individual aspects (Simon)  
b) Organisational decision theory (March)  
differences between a) & b) i) Ambiguity, ii) longitudinal & on going consequences; iii) incentives and penalties; iv) repeated decisions  
Shapira, Z. (ed.) (1996) *Organizational Decision Making: Cambridge series on judgement and Decision Making*, Cambridge: Cambridge University Press
- 1996 **Clemen**  
Good book on Decision Analysis  
Clemen, R. T. (1996). *Making Hard Decisions; An Introduction to Decision Analysis*. (2nd ed.). Duxbury Press, Belmont, CA.
- 1996 McTaggart, R. (1996) 'Issues for participatory action researchers' in O. Zuber-Skerritt (ed.) *New Directions in Action Research*, London: Falmer Press.
- 1997 **SoL Founded at MIT**
- 1998 Brown, R. (1998) *Group Processes: dynamics within and between groups*. Oxford Blackwell Publishers Ltd

- 1999 **Hammond, Keeney and Raiffa**  
Hammond, J. S., Keeney, R. L., and Raiffa, H. (1999). *Smart Choices: A Practical Guide to Making Better Decisions*, Harvard University Press, Boston, MA.  
<http://www.communities.gov.uk/index.asp?id=1142272>
- 1999 Woodhead, R.M. "The influence of paradigms and perspectives on the decision to build undertaken by large experienced clients of the UK construction industry", School Of Civil Engineering, Ph.D.Thesis. University of Leeds.
- Forgive me citing my own work. I looked at how large organisations from different industrial contexts arrive at the decision to build new facilities. At the time this was an uncharted area. I assumed that very different industries would approach things in different ways; e.g. a hospital Vs a hamburger chain. I was wrong. Given no books charted the area how could actors go about things in similar ways?
- I reasoned they reacted to the demand of external systems. Therefore they are not free thinkers as the choices available to them are controlled by other systems such as needing planning permission and all such entails.
- The PhD thesis is in 2 volumes (I went overboard ;-)) and has around 2-300,000 words
- It could describe what happens in ten frames. Each frame is a self contained story that could stand alone but by reading with the others a heightened explanation was possible. The frames were:
- 1 The capital investment paradigm
  2. The Cost-Benefit Analysis paradigm
  3. The Financial paradigm
  4. The Strategic paradigm
  5. The Marketing paradigm
  6. The Organisational perspectives (More than one at play)
  7. The management perspectives
  8. The Property Development paradigm
  9. The Planning Permission paradigm
  10. The Preliminary Design paradigm
- The research method that dominated was Grounded Theory.
- 1999 Gold, M. (ed.) (1999) *The Complete Social Scientist. A Kurt Lewin Reader*
- 1999 Stringer, E. T. (1999) *Action Research 2e*, Thousand Oaks, CA.: Sage.
- 2000 Woodhead, R.M. and Male, S.P., "The conditioning effect of objective decision making on the client's capital proposal", *Engineering Construction and Architectural Management*, Blackwell Science; 7(3), September, 300-306.
- Provides a summary of my PhD thesis.

- 2000 Ullman, D. (2000) 'Kurt Lewin: His Impact on American Psychology, or Bridging the Gorge between Theory and Reality', <http://www.sonoma.edu/psychology/os2db/history3.html>
- 2001 Woodhead, R.M., "An investigation of the early stages of project formulation", *Facilities Management*, MCB Press; Vol.18; 13/14, 524-534.  
Based on PhD thesis, it looked at the stages before a project begins (I named this the Pre-Project stage). What happens at first, what is needed for 'Approval in principle', the outline business case and the full business case.
- 2002 Woodhead, R.M. & Smith, J. "The decision to build and the organisation". *Structural Survey*. Vol. 20 No.5 pp 189-198  
Based on PhD thesis it explains the roles in the process:  
**Decision Approvers:** people who rubber stamp proposals so long as the economic case is sound (e.g. Capital Expenditure committee that only meets say once a month)  
**Decision Takers:** The person who ensures only good proposals go to the Decision Approver. For example a senior project manager with aspirations of one day becoming a board member  
**Decision Shapers:** The people that craft the proposal from raw ideas to costed schematic drawings. These people make a psychological investment in the project and for them the goal is to win approval. There were some instances where they knowingly made bad decisions to avoid capital investment rules.  
**Decision Influencers:** These can be internal peers or external stakeholders. They try to influence the way the pre-project progresses.