The Use and Misuse of Analogies in Business

“An Experimental Study of the Application of Analogies in Strategic Decision Making”

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Abstract:

This study aims to examine how analogies can improve the option generation stage in strategic decision making. An experiment is being developed to test what effects different types of analogies have on subjects’ abilities to develop strategies for a fictitious business scenario. The different types of analogies include single or multiple analogies and remote or close analogies.
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Section 1: Introduction

This study aims to determine what analogies are to be used in a given situation for a given purpose, as analogies are often used in situations ranging from everyday conversations to strategic decision making. However, analogies, when misused, can lead to disastrous outcomes. Therefore this paper contains background information on the use of analogies, the research question and objectives, and the academic as well as managerial value of this study. Further, a literature review on option generation within the context of strategic decision making and a review of analogies help to understand how analogies can impact on the generation of options. In the conceptual development the relationship between analogies and option generation is explained and hypotheses about the effects of analogies on option generation are developed.

Background

Managers often use analogies to provide the assumptions for strategic planning. For instance, Thomas Stemberg, founder of Staples, set up the initial strategy by drawing an analogy between Staples and Toys ‘R’ Us when he asked “Could we create the Toys ‘R’ Us for office supplies?” (Stemberg 1996). Charlie Merrill, founder of Merrill Lynch, as well as Charles Lazarus, founder of Toys ‘R’ Us, relied on their analogies between the retail brokerage and the supermarket industry (Perkins 1999) and toys retailing and supermarket retailing respectively (Hast 1992). However, not all strategic decisions influenced by analogies have led to success. Kenneth Lay, chairman of Enron, compared the broadband business to their gas and electricity business and concluded that the broadband business was a great opportunity. However, he overlooked important differences and Enron’s broadband business became a factor in the demise of Enron (Daily Gas 2000; Jenkins 2003). Within the strategic planning process analogies can be used for different tasks. The tasks include, but are not limited to, the generation of strategic options, the analysis of options, and the communication of strategic options (Gavetti, Levinthal & Rivkin 2005).

The Boston Consulting Group (BCG), one of the most prestigious management consulting firms in the world (Vault.com 2007), encourages its consultants to use analogies in developing new strategies (Gray 2003; Boston Consulting Group 2000). In order to do this they have a collection of images and texts from a variety of areas. The collection is sorted according to ‘Disciplines’, ‘Business Concepts’, or ‘Strategic Themes’. For example, ‘Disciplines’ include ‘Biology’ or ‘Literature’, ‘Business Concepts’ include ‘Consulting Processes’ or ‘Relationships’, and ‘Strategic Themes’ include ‘Big vs. Small’ or ‘Competition and Cooperation’. The different categories lead to ‘Exhibits’ (the analogies) that contain images and texts, such as, ‘Alcoholics Anonymous’, ‘Lives of a Cell: On Societies as Organisms’, ‘Madonna’, ‘Nietzsche on Good and Evil’, ‘The Mind of a London Taxi Driver’, or ‘The Strategic Re-Orientation of Early Christianity’. A consultant seeking inspiration for planning the
operations of a new firm might find the exhibit ‘Madonna’. This exhibit contains a comprehensive text on how Madonna became successful, which might help to generate strategic options for the new firm. As this example of the application of analogies in business shows analogies are important.

**Research Question & Objectives**

Relatively little research has been conducted to guide problem solvers in the use of analogies. This study aims to answer the following research question:

How are analogies used and misused in business?

As there are many situations where analogies can be used, exceeding the scope of this study, the aim of this study is focusing on the following research objective:

To determine what specific analogies foster the generation of strategic options

**Significance of the Study**

This study aims to contribute to the underrepresented literature on the use of analogies in strategic decision making. The significance of this study is twofold. On the practical side, the study is valuable to managers as it helps to improve strategic decision making by enhancing the generation of strategic options, through the better use of analogies. On the academic side, the study is valuable as there has been much research on the comprehension of analogies but relatively little has been done on the practical application of analogies in certain situations, therefore this study aims to contribute to the understanding of analogies (see Sopory & Dillard 2002; Holyoak & Thagard 1996; Gentner, Rattermann & Forbus 1993; Holyoak & Koh 1987; Keane 1987 for exceptions).

**Section 2: Literature Review**

In order to have a better understanding of how the use of analogies might impact on decision making the literature on decision making and analogies has been reviewed. In the decision making literature the focus has been on the option generation stage and its importance to make good decisions. In the literature on analogies the focus has been on what analogies are, what they can be used for, how they differ, and what analogies foster creativity. This literature review will set the scene for the conceptual model of how certain analogies can enhance the generation of options in strategic decision making.

**Theory of Decision Making**

To continuously survive and thrive, organisations must cope with many issues, such as globalisation, increased competition, better informed customers, government regulations, just to name a few, and make strategic decisions (Santanen 2004; Hill, Jones & Galvin 2003). Many of the decisions are “ill-defined” (Taylor 1974) or “nonprogrammed” (Davidson et al. 2006) so that they have an incomplete
structure, are lacking clear goals, and bear uncertainty or risks. Solving ill-defined problems requires the decision maker to gather information, create causal hypotheses to explain the cause of the problem, generate and evaluate options, and take action (Davidson et al. 2006; Adelman, Gualtieri & Stanford 1995; Smith 1988). The option generation stage is critical in decision making, as managers or any decision maker can only make a good decision if a good option is included in the option set. However, relatively little research has focused on the option generation stage in decision making (see Santanen 2004; Johnson & Raab 2003; Adelman, Gualtieri & Stanford 1995; Gettys et al. 1987; Engelmann & Gettys 1985 for exceptions).

Option Generation

Methods of option generation such as brainstorming, interacting groups, Delphi group, or Nominal group (Ven & Delbecq 1974) are used in group decision making (Davidson et al. 2006). Other research has focused on the impact of information provided to problem solvers before generating options (Adelman, Gualtieri & Stanford 1995; Gilovich 1981). It was found that providing participants in an experiment with different causal foci led to the generation and selection of different hypothesis about how to solve the given problem and to the generation and selection of different types of solutions (Adelman, Gualtieri & Stanford 1995). Gilovich found that participants’ recommendations for solving an imaginary international conflict were influenced by irrelevant information that compared the conflict with different historical analogies (Gilovich 1981). This is in line with research on framing in decision making, which predicts that people draw conclusions based on how a problem is described (Bazerman 2006; Russo & Schoemaker 1990; Tversky & Kahneman 1973; Payne, Laughhunn & Crum 1980). Furthermore, divergent thinking and creativity have been found to improve the generation of options or acts, particularly, for ill-structured problems (Bonnardel & Marmeche 2004; Santanen 2004; Engelmann & Gettys 1985).

Theory of Analogy

To better understand how the use of analogies can improve the generation of options it is important to understand what analogies are, in general terms and more technical terms, the different characteristics of analogies, and the characteristics of creative analogies.

Analogy

An analogy is a comparison to show similarities between two objects (Oxford English Dictionary 1989). Metaphors are used in similar ways and the terms analogies and metaphors are used interchangeably in the business arena (see Drummond & Hodgson 2006; Cornelissen 2006; Yemm & Hoverd 2005; Holyoak & Thagard 1996 for examples). This study will use the term analogy for what Plato and Aristotle called a shared abstraction for things that do not necessarily share a relation, but an
idea, a feature, an effect or a purpose (Shelley 2003), as this captures the general nature of analogies and metaphors, used in the business arena.

**Analogies more specifically**

According to Gentner’s Structural Mapping Theory, one recognises that “one thing is like another” by mapping structures or relations from a base onto a target (Gentner 1983). The similarity between base and target lies in the relations that hold within the domains. For instance, the flow of electrons in an electrical circuit is similar to the flow of people in a crowded underground tunnel. However, the similarity does not lie in the features or attributes of the objects. This is, using the example above, the electrons in the circuit do not resemble the people in the tunnel (Gentner & Holyoak 1997, p. 33). Furthermore, analogical similarity often relies on higher-order relations, so that adding a resistor to a circuit results in a decrease in flow of electricity, just like adding a narrow gate in a tunnel reduces the rate at which people pass through.

Other authors have studied how analogies are comprehended. Holyoak and Thagard (1989) proposed the Multiconstraint Theory within the Structural Mapping Theory, Cornelissen (2005) the Domain-Interaction Model, Fauconnier and Turner (1998) proposed the Conceptual Blending Theory, Chalmers and colleagues (1992) the High-Level Perception Theory, and Gentner (1983), Landers (1985), Rattermann (1993), Markman (1997), Holyoak and Koh (1987), Keane, Ledgeway and Duff (1994), and Thagard and colleagues (1990) have generally agreed, on the nature of analogical thinking. While important to a general understanding of analogies, these theories are concerned with the underlying cognitive processes of analogies and therefore do not have a direct bearing on this study.

**Characteristics of Analogies**

Analogies can differ in a variety of dimensions, which include the use of a single or multiple analogies and the difference between the base and target domain, which I will discuss below. Two other dimensions include emotional vs. rational connotation and the basis of the similarity but are not included in the discussion as they would exceed the scope of this study. However, there are more dimensions of analogies discussed in the field of cognitive science but that is beyond the scope of this study.

The difference between base and target refers to the semantic differences between the base and target domain denoted as “High vs. Low Between Domain Distance” (Cornelissen 2006), “Intra vs. Interdomain Analogy” (Bonnardel & Marmeche 2004), or “Close vs. Remote Analogy” (Kokinov 2005). A close analogy is to compare a software company to Microsoft because the target and the base are both from the same industry. A remote analogy is comparing Microsoft to McDonald’s because the companies come from entirely different industries.
Characteristics of Creative Analogies

An analogy that fosters creative thinking is a creative analogy and is the focus of this study. In this section two dimensions of creative analogies will be discussed.

Nonaka and Takeuchi looked at how Honda developed the “Honda City” car (Nonaka & Takeuchi 2006). They found that the developers used multiple analogies in its development, including the analogy of an “Automobile Evolution” and “Sphere” to come up with an efficient and spacious car concept. In line with Nonaka and Takeuchi, Ghyczy argues that one needs to develop multiple analogies rather than seek the “right” one in order to develop creative solutions (Ghyczy 2003).

Mednick (1962) suggests that the more apart elements of comparison are the more creative the solution can be, as does Koesteler (1964), who suggests that creative acts happen when two different frames of reference are combined. Mauzy and Harriman (2003) found that combining knowledge from different disciplines can foster creativity and improve problem solving efforts. They give an example of how a scientist tries to develop a non-invasive method to observe glucose in the human body and finds the solution in a different discipline in the form of electroporation. This charges the skin with electrical charges, which widens the pores enabling the scientist to observe the glucose levels without damaging the skin. On a similar topic, Gick and Holyoak (1980) did an experiment in which participants were to solve a tumour problem given a story about a military general conquering a fortress. The fortress story enabled a possible solution to the tumour problem but the base and the target came from very different domains.

Conclusion

To conclude, the importance of option generation in decision making as well as what can improve the option generation process has been discussed. It was found that creativity is an important factor that improves the generation of options for a given problem.

Afterwards, it was outlined what analogies are to better understand the structure and characteristics of analogies. Then it was described what analogies can foster creativity, as creativity was found to be important for option generation in decision making.

Next, the conceptual framework, that combines the findings on option generation and analogies and how analogies can improve the generation of strategic options in decision making, will be outlined.

Section 3: Conceptual Development

This study focuses on the use of different analogies and how they impact on people’s ability to generate strategic options in response to a given business scenario, as depicted in the Conceptual Model on the next page. The literature demonstrates that creativity fosters the generation of options therefore analogies that foster creativity were studied (Engelmann & Gettys 1985; Santanen 2004;
It was found that analogies with certain characteristics were better at fostering creativity and therefore the generation of strategic options than others (Koestler 1964; Nonaka & Takeuchi 2006; Ghyczy 2003; Mednick 1962; Mauzy & Harriman 2003; Gick & Holyoak 1980). This leads to the following hypothesis as shown in the conceptual model in Figure 1:

The use of certain analogies can improve the generation of strategic options, as opposed to the use of no analogy

More precisely, it was found that the use of multiple analogies (Nonaka & Takeuchi 2006; Ghyczy 2003) and the use of remote analogies have a positive impact on creativity (Gick & Holyoak 1980; Koestler 1964; Mauzy & Harriman 2003; Mednick 1962). This leads to the remaining hypotheses shown in the conceptual model in Figure 1:

The use of multiple analogies improves the generation of strategic options, as opposed to the use of a single analogy

The use of remote analogies improves the generation of strategic options, as opposed to close analogies
Section 4: Research Methodology

The research plan for this study consists of developing an experiment, conducting the experiment, and analysing the findings in SPSS. Experimental research methodology is appropriate for this type of study as it allows for great control over the variables and environment to determine the causal effects of the independent variables (Zikmund 2003). It also allows for comparability to other studies which used the same methodology (Gettys et al. 1987; Engelmann & Gettys 1985; Adelman, Gualtieri & Stanford 1995). Other advantages of this methodology are the convenience and cost of experimentation as well as the possibility of replication (Cooper & Schindler 2006). Disadvantages include the artificiality of the situation and the problem of making generalisations from nonprobability samples (Cooper & Schindler 2006).

Sample

A convenience and judgement sample of approximately 150 undergraduate students taking Strategic Management, a third year management unit at the University of Western Australia, will be used in this experiment. The students of this class are deemed to be appropriate participants in this study as they will have been exposed to a variety of management topics but will not vary greatly in management experience. Also, it has been shown in the past that general cognitive tasks, carried out by students, can be applied to managers (Kahneman & Tversky 2000). Participation will be voluntarily.

Experimental Procedures

At the end of a lecture the professor will invite students to participate in this experiment. Those who are interested will be given a business case scenario which discusses a software firm facing a dilemma, (see Appendix for the instrument) and will be asked to generate as many solutions as they can think of for the firm’s problem. The participants will be randomly assigned to one of the five experimental groups. In the business scenario four experimental groups will be primed with different analogies, holding everything else in the scenario constant and the control group will not be primed with an analogy. Participants, all of whom will work independently, will be asked to follow the same procedures for all conditions as well as the control group.
**Relevant Variables and Treatment Levels**

The independent variables are the characteristics and uses of the analogies used in the cases. The treatment levels for the independent variables are determined as (1) the use of a single analogy vs. multiple analogies and (2) the use of close analogies vs. remote analogies.

This results in a 2 x 2 design (see Figure 2) plus a control group:

Group 1: single close analogy [Microsoft]

Group 2: single remote analogy [McDonald’s]

Group 3: multiple close analogies [Microsoft, IBM, Oracle]

Group 4: multiple remote analogies [McDonalds, Virgin, BMW]

Group 5: The control group will not be primed with an analogy at all.

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<th>Close Analogy</th>
<th>Remote Analogy</th>
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<tr>
<td>Single Analogy</td>
<td>Group 1</td>
<td>Group 2</td>
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<td>Multiple Analogies</td>
<td>Group 3</td>
<td>Group 4</td>
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The dependent variable is the number of generated options in response to the scenario.
References


Daily Gas 2000, *Broadband to be as Big as Enron in Five Years*, April.


Appendix: Preliminary Experimental Instrument

Strategy Development Exercise - Strategic Management - MGMT3347

Instructions
My name is Ferdinand Dublin and I am working on my thesis in Strategic Management. The following exercise is part of my research on strategy development and will help you in thinking about strategy as this is the topic of this unit. I would very much appreciate if you could take the time to do the exercise and return your solutions to your tutor, lecturer, or the business school. I will only need your responses and your responses will remain confidential. Thank you!

Background Information
Software One is a software company situated in San Francisco with more than five thousand employees. They develop and implement office applications and client management software. For years, the revenue had been excellent due to the increase in client management strategies. However, last month it became public that one of the systems, Software One, had been implementing was insecure and hackers were able to retrieve client information and account details from a variety of firms that had implemented this client management system from Software One. It also became public that management was aware of these security issues but did not want to reduce the revenues as a competitor had already been stealing market share. As a result, demand dropped by 90% and the firm has been sued for knowingly implementing insecure systems, risking the security of their customers’ data. Due to the law suits Software One filed bankruptcy and was taken over by a leading investment firm, which plans to use the assets to set up a new software firm.

Current Situation
You are a young consultant working for a prestigious management consulting firm and are invited by the investment firm to attend a meeting. At this meeting the management of the investment firm explains the situation and informs all the consultants invited, from various other consulting firms, to develop strategies on how to make the new software firm successful. The spokesperson of the investment firm suggests considering Microsoft when developing ideas for the new software firm. All consultants are invited to present their ideas at another meeting a week later. At the end of the session the management of the investment firm will decide whose ideas to pursue, which will lead to a big contract with that consulting firm. If your ideas get pursued, you are sure to be promoted and become the project manager for implementing your ideas, which will greatly advance your career.

Task
In the role of the young consultant you are asked to develop strategies on how to make the new software firm successful, i.e. what the company should do to differentiate itself from its competitors. Prepare a summary of as many ideas as you can think of for the management of the investment firm. The summary should not exceed the back of this sheet and should be in dot-form. You should also keep the spokesperson’s advice in mind to think of Microsoft when developing ideas.

Ferdinand Dublin  Thank you very much for your time!  4/05/2007