To: Technology Strategy Students and other budding case readers and writers
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CC:

Subj.: On reading and analyzing technology-rich cases

This note is an explanation of a framework created by Burgelman and Rosenbloom which I have found useful when trying to understand company technology strategy evolution (and, for that matter, how non-technical companies evolve), and some comments on how prepare a case by organizing information about companies and the technological and competitive situation they are in. The approach is simple and can also be a help when writing a case or a paper about a company.

Information overload
Students who read technology-rich cases (such as, say, Dell, Glamox, BEA Systems or Apple) frequently feel overwhelmed by information – there are so many details, some of them important, the company and the industry it operates in is unfamiliar, and frequently the technology is complicated and hard to understand as well. This is often intentional – a business teaching case is meant to reflect the very real complexity felt by managers in the real world. In addition, a teaching case is often used in different subjects – say, HR, marketing and strategy – so that each teacher may concentrate on different aspects of the same case. The result is many pages and many details – and that the salient features, for the student, often disappears in the noise.

The answer, of course, is preparation. An important reason to use cases is that the student immerse him- or herself in the case, to the degree where the student develops a "feel" for what the company is like. An experienced consultant or executive can often quickly read through a case, supply the case content with their own experience, and quickly hone in on the key issues. Students, especially students with little managerial experience, often cannot do this, and lack a way to "get into" the *gestalt* of the case. Spending time helps, but we need frameworks – conceptual tools to organize our thoughts in the face of complexity.

Over the years, I have found one framework to be particularly useful, namely Burgelman & Rosenbloom's Technology Strategy Evolution framework, first presented in 1989[2]. These authors depict a framework that helps track technology strategy – what companies do with technology – as an evolutionary process. Companies start with a certain technological capability. A technology strategy is created, and based on this strategy, the company experiences something – and have a new basis for the next technology strategy:

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[2] Burgelman, R. A. and R. S. Rosenbloom (1989). Technology Strategy: An Evolutionary Process Perspective. *Research in Technological Innovation, Management and Policy*. R. S. Rosenbloom and R. A. Burgelman, JAI Press Inc.**:** 1-23. The framework also forms the organizing basis for several textbooks in strategic technology management.

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   Technical              Technology                Experience
  Capabilities    →        Strategy      →
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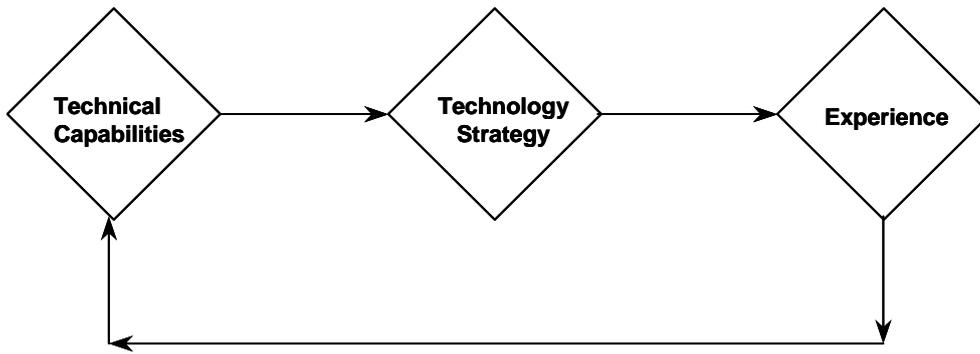
However, companies do not make decisions about their technology strategy in a vacuum – there are influencing mechanisms from the environment. Burgelman and Rosenbloom categorize these mechanisms as either *generative* or *integrative*, and as either *internal* or *external* to the organization. The four combinations lead to the following mechanisms:

- *strategic behavior* (internal environment, generating mechanism) is what the organization (normally its top management) *wants to do*
- *technology evolution* (external environment, generating mechanism) are the changes in technology that occurs outside the organization
- *organizational context* (internal environment, integrating mechanism) is the organization itself, its history and structure
- *industry context* (external environment, integrating mechanism) is the industry that the organization competes and cooperates within

Putting this together, we have the following framework:

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                    Internal Environment

          Strategic          →    Organizational
          Behavior           ←        Context

 Generative                                        Integrative
 Mechanisms        ↓↑    Technology    ↓↑          Mechanisms
                          Strategy

          Technology         →      Industry
          Evolution          ←       Context

                    External Environment
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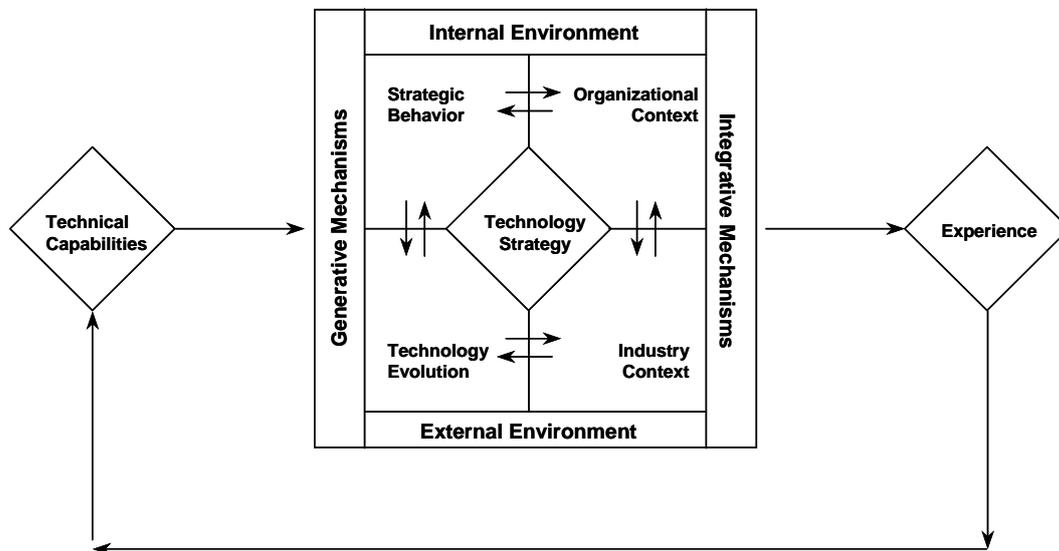
Analyzing a case using the framework

First, as you should always do when reading a case, read through the whole case quickly, to get a "feel" for the company and the scope of the case. Think about the external and internal environment – what is the company and its management like, how is the competition and who are the external stakeholders, which technologies are important and how are they changing?

The next step is to become more systematic. Start by setting up a timeline – what happened when, and why? Here the framework is a good help, you can create a table that looks roughly like this:

Episode	Strategic action	Organizational context	Technology evolution	Industry context
Episode 1:				
Episode 2:				
Episode 3:				
etc.				

Read through the case, and see if you can identify strategic episodes – periods of time where you can see the organization taking a specific course. Don't be overly concerned about finding the "right" episodes – if nothing else, use the left column as a timeline and redo it later. If the organization has a pattern of bold and aggressive strategic moves, look for explicit strategies (column two) and see what the situations were in terms of organization, industry and technology at the time the strategies were made. Or if the organization is more of a follower and adaptor of technology, use the technology evolution column as the starting point.

When you have done this and filled out the table with comments and notes to yourself, it is time to reflect: Read through the case a third time, now referring to your notes. Fine-tune your view of what has happened and why – for instance by using colored pens and drawing lines between various things that have happened, trying to see if one thing follows from another and how. Then, turn to the specific problem the case poses, often expressed in study questions. Long and technical cases are often used for multiple purposes in teaching – one can discuss from the viewpoint of technology architecture, marketing, implementation, effect of technology, competitive positioning etc.

Lastly, prepare for the discussion – with your notes, decide for yourself what you think are the three or four main points of the case in reference to the study question, and how you would answer them if asked. Before class, meet with your study group and discuss the case between yourself in class – with one student opening with an overview and the others building on that.

With this approach, you will build a good fundament for both for contributing to and learning from a rich case and a lively case discussion – good luck!