

# Looking for the right path : technology dynamics, inventive strategies and catching-up in the semiconductor industry

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Propositions accompanying the thesis

**Looking for the Right Path**

***Technology Dynamics, Inventive Strategies and  
Catching-up in the Semiconductor Industry***

by

Giorgio Triulzi

1. The more latecomer countries strengthen their technological capabilities, the more globalization of technical knowledge flows resembles a random phenomenon. (Chapter 2)
2. The inventive process is largely a problem-solving activity. Therefore, to understand the scale of change in capabilities and, consequently, the availability of entry and catching-up opportunities, technological trajectories need to be studied at the level of technology domains rather than at the product level, as it is at the former that engineering problems arise. (Chapter 3)
3. The structure of the system of engineering problems and changes in the variety of problem-solving approaches may explain clustering of big innovations and, possibly, the formation of technology-induced economic cycles. (Chapter 3)
4. For any given domain of technology, the combination of inventions' age and centrality along the main trajectories of technical improvements, determines its life cycle stage. (Chapter 4)
5. When technological change is knowledge-replacing, in contrast to knowledge-reinforcing, technological diversification has a stronger positive effect on firms' chances to persist innovating at the technological frontier (Chapter 5).
6. Strategies that conform to what commonly dictated have very low explanatory power and go unnoticed. Unusual strategies are noticeable but, if advantageous, are likely to quickly become conformism. The only way to stay ahead may require being schizophrenic.
7. Even if universally valid and replicable strategies for catching-up may not exist, history is informative. Understanding the past is the first step to depict how a plausible alternative world would look like and to create reasonable models to shed light on the future.
8. Systems evolve because of conscious choices or random perturbations. To understand the former we need to model the latter. (*Inspired by a statement by Gerald Silverberg*)
9. "*The combination of some data and an aching desire for an answer does not ensure that a reasonable answer can be extracted from a given body of data*". (John Tukey)
10. "*Aprendí que el camino es largo, que el camino es duro pero se puede llegar*". (Hugo Candelario González) English translation: " I learned that the path is hard and long but you can make it to the end"