Industry Studies: An Observational Science

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People sometimes ask what is *industry studies*. For me the answer is entirely straightforward. Industry studies is an observational science. It is one of many such sciences. In Physics its parallel is astronomy. Astronomy is a science, but it is not a laboratory science; you can't do astronomy is the lab. But you can observe the heavens in all their complexity and then build theories to try and explain what you see up there. In Astronomy there are people who observe, and there are people who do theory and try to bring order out of the observations.

Even more like industry studies is that part of Biology that deals with ecological systems. Biologists observe the behavior of ecological systems, of the animals and fish that are prominent in such systems, how they interact with each other and with their surroundings. They build theories to explain what they or others have seen.

In our case the systems we study involve companies and markets and institutions and their interactions instead of animals and forests. But we too must observe if we are to accurately understand and describe the remarkable complexity of it all.

It was direct observation of this sort that enabled Charles Darwin to devise the theory of evolution. He made a long and difficult and now famous voyage across the Pacific and what he saw on that voyage shaped what he did for the rest of his life. And what he did for the rest of his life changed the world.

Darwin had to make a long and difficult journey to see what he saw. And for many of us it is a long and difficult journey to see and understand what we need to see and understand about industry. Why is it difficult? There are no seas to cross; in fact there are companies just down the street. What is the nature of the difficulty?

Actually we should realize the difficulty is quite fundamental.

Although we are used to the idea that there are things that are too small to see, we are less used to the idea that there are things that are too large to see. We know that we need a microscope to see very small things, but we are less aware of the difficulty and effort required to see very large things. Seeing large things, like industries, would be much simpler if we had a *macroscope* to see in real time and in glorious detail how the huge world of industry functions. We could see steel being formed and transported, we would see people in call centers responding to their millions of calls, We could clearly see which parts function and which parts don't.

Unfortunately we don't have a real macroscope. Statistics is in fact our attempt at a macroscope but it is one that only functions erratically. It functions erratically because if we have the right overall picture, then the statistics can size it right for us, and tell us more about it, but if we don't have it right, the statistics won't tell us that we don't have it right and we can be very wrong. This is an important point so I will give an example

Regularly people used to bring before the U.S. Congress evidence of U.S. industry's underinvestment in R&D. People used to point out regularly that German industry spent 2.5% of Germany's GDP on R&D, that Japan spent 3% and the U.S. only 1.9%. – Very Alarming.

However, at the time it was a fact, but a little known one, that almost all the R&D that was reported, and therefore ended up in the government R&D statistics, was in the manufacturing sector. The manufacturing sectors of Germany and Japan were larger as a proportion of the GDP of those countries than the manufacturing sector of the U.S. was of U.S. GDP. In fact the manufacturing sectors in all three countries were about equally R&D intensive. The reported numbers did not reflect an alarming under-spending on R&D of U.S. firms in general, rather they accurately reflected the size of the manufacturing sectors. That did not prevent their being used and widely believed and influential in a totally wrong way.

This is why it so important to go and see and understand. Statistics help enormously, but you need to observe, get the picture right first; and then let statistics tell you how big it is.

I hope that the members of the industry studies community will make these necessary and unavoidable and sometimes uncomfortable voyages of observation. I hope that industry studies will also bring us new theoretical understanding. We will benefit from both.

Which individuals will be Charles Darwin the Theorist and which will be Charles Darwin the Observer I do not know, but I do know both are vital. And from the combination of these efforts, I look forward hopefully to the emergence of the next theory of evolution.

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