A. Smith: The Wealth of Nations - Lecture Notes

LECTURE NOTES - WEEK 2: DIVISION OF LABOR

The phenomenon of division of labor was not conceptualized and even less was it "discovered" by Adam Smith. In fact, the occurrence, in society, of examples of division of labor (henceforth DoL), defined as "the subdivision of a process, or employment, into parts[1]" was observed as early as about two millennia before Smith, by the Greek classical philosophers. In particular what was observed was the "natural" (evolutionary) expression of the phenomenon, that is, the *social division of labor.*

In a sense, social DoL, is more easy to observe in ancient cultures, because it is comprised of a number of phenomena that occur naturally in the course of human evolution. Examples of that are sexual DoL, for instance in hunters-gatherers societies, and the specialization in arts and crafts typical of most medium-sized societies with characterized by medium-density human settlements (e.g. the Greek city-states). What is not as obvious, or at least it wasn't until later in human evolution, is that it is possible (and efficient) to decompose the production of a specific type of good into a multi-stage process: this is the so-called *manufacturing division of labor*, and it is the type of DoL on which Smith focuses most of his attention in the firsts chapters of *The Wealth of Nations.* In Smith's times, manufacturing DoL was a relatively recently and unexplored phenomenon.

By focusing on the manufacturing DoL Smith was one of the first intellectuals to postulate a strong positive relation between DoL and national and human growth; where growth is dependent, according to Smith, on the *productive power of labor.* So, in *The Wealth of Nations* smith postulates (and provides support) for the following correlation:

DIVISION OF LABOR ∝ PRODUCTIVITY.

In particular, as DoL, increases, productivity increases, where the limits of the DoL are set by the extent of the market (more on this later).

Explanatory reasons for the correlation are, in Smith:

- A. Increased dexterity

- B. Saving time

- C. Focus on small processes favors machine-inventiveness

However, there are a number of issues, which later theoreticians highlighted, with Smith's account of the three reasons he provides in order to justify why DoL increases productivity. Namely:

- PROBLEMS WITH SMITH'S ACCOUNT OF (A)

    - Overspecialization
    - Different practices allow for different maximum levels of specialization

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[1] Entry 'division of labor' in *The New Palgrave Dictionary of Economics, Second Edition* (2008).

- PROBLEMS WITH SMITH'S ACCOUNT OF (B)

  – More relevant factors involved in the passage from the putting-out system to the factory system:
    * Fewer losses from pilfering
    * Use of instruments

- PROBLEMS WITH SMITH'S ACCOUNT OF (C)

  – Hegel's observation: the subdivision of a process in smaller sub-processes makes the latter more mechanical and therefore more apt to be carried out by machines.

Towards the end of chapter 1 Smith shifts the focus from the manufacturing DoL to the social DoL. However, in chapter 2, when analyzing the causes of DoL he accounts for the latter, rather than the former. Namely, according to Smith, the principal cause of DoL is the propensity of humans to truck, barter, exchange and purchase from fellow humans. The question is, then, whether by illustrating that propensity Smith has explained social DoL only, or also manufacturing DoL. Propensity to barter and exchange seems to explain social DoL, but it is hardly an explanation for manufacturing DoL.

Next, Smith puts DoL in relation to the development of talents. The causal relation, in Smith's account, goes from the former to the latter, not vice-versa. That is, humans develop different talents *because* they are assigned a specific role in the society they live in, not the opposite.

The analysis of the phenomenon of manufacturing DoL has been analyzed further after Smith's work.

- Charles Baggage develops on the relation between DoL, dexterity, and invention of new machines. He establishes a relation between minimization of the costs of the productive process and the resources employes. In particular, minimum costs are incurred when the employment of total capital is a multiple of '$P + I$', where P is the number of processes needed for the production of a certain good, and I is the number of individuals employed for each process.

- Andrew Ure establishes a relation between DoL and the need for skilled labor. In particular, DoL allows for more unskilled labor to be employed. Using Smith's example of the process of production of pins, it is to notice that learning how to make pins requires a certain amount of training in the various phases of production; similarl considerations hold, for example, in the making of a piece of furniture or any other finished good. To the contrary, learning how to perform a single step of the manufacturing process of a certain good requires only relatively less advanced skills. For those reasons, going from the artisanal system of the Middle Ages, to the manufacturing DoL system of the industrialized era, allows for a net gain in terms of time previously utilized for developing skills (the so called "apprenticeship"), as relatively unskilled labor can now be employed directly and more quickly in the manufacturing process.

- For further development of other aspects of DoL see also:

  – Leonard E. Read
  – Paul Krugman

In this section I will focus on the epistemological status of Smith's observations, in comparison to more contemporary observations made in the context of the analysis DoL.

In the Wealth of Nations, Smith states a number of relation between phenomena. For instance, DoL $\propto$ output; DoL $\propto$ skill (talent) development; output $= f$(dexterity, time, focus); increases in the DoL $\propto$ dexterity; and so on. The problem is to understand *how* these relations are established. What sort of evidence does Smith provide for asserting those relations?

In *The Wealth of Nations* all of those aforementioned relations are established by observation of (and acquaintance with) the manufacturing processes, and by a-priori reasoning. But how do modern economists develop and refine those relations? From a look at some of the contemporary analysis of DoL — see for example Krugman (1991) and Becker and Murphy (1992) — one can easily see that the methodology has changed substantially: justification of any qualitative as well as quantitative relation is acquired as mathematical derivation of theorems from modelistic assumptions. In other words, Krugman, Becker, Murphy and others *modus operandi* is to establish a mathematical model of the phenomenon they intend to investigate, and derive mathematical conclusions from those models, in the form of theorems, corollaries, etc.

The next topic of this section of the course leads us to chapter 3, where Smith states that "the division of labor is limited by the extent of the market". The latter is called, in subsequent literature, "Smith's famous theorem."

Smith explores the concept that the division of labor is limited by the extent of the market mostly in the first couple of paragraphs of chapter 3. Next, he explores the different ways in which a market can be extended, for example by the discoveries of new commercial routes, or increases in the efficiency of modes of transportation.

Smith's famous theorem was explored by Young and Stiegler, among others. It is to be noted that Smith thought that the extent of the market is mostly dependent on "external factors", for example, the invention of new machinery can provide a new opportunity for further division of labor, similarly the reorganization of the productive processes, geographical openings of the market, and so on, can also provide new opportunities for DoL. On the other hand, Young sees the relation between DoL and extent of the market in a different way. Young establishes that there is a self-feeding relation between DoL and productivity: it is not only that DoL increases productivity, but also that increases in productivity allow for further division of labor, in virtue of the fact that increases in productivity by themselves extend the size of a market (see Young (1991) pp. 533, 534).