

## COMMENT

---

RAÚL GONZÁLEZ FABRE

I. A basic principle: 'Whatever can be done by a machine, will be done by a machine rather sooner than later'.

Machines are more reliable than people, do not have family life to conciliate, no labor legislation is going to protect their rights, etc.

What will they be able to do in the future? We don't know and we are not going to know, because technological progress is more that linearly accumulative. It grows through better algorithms, better applications to the creation of economic value, and higher computation capacity. There is no 'steady state' nor 'constant acceleration' state for technological development, allowing for predictions, and there is not going to be.

As far as I can see, the supposition that no major technological breakthrough is going to affect economic activity during the next 10-20 years, is maybe too much of a guessing. By now, it is already obvious that not only material production and financial services and trading, but also commerce of non-perishables is being heavily affected by computer intermediation. Transportation seems to be close in line...

II. The demand remaining predictable (in fact, growing as more people leave poverty) is a demand for functions, not for products. Technological development may eventually lead to the same functions being carried out by different products.

Let us suppose that I need to speak personally to colleagues in China: a function. We can pay a professional interpreter. Or I can learn Mandarin, they can learn Spanish, or we both can learn a common third language, say English. Or a real-time computer interpreter can be developed that allows me to speak in Spanish and them to hear in Mandarin, and

vice versa. The same function, with its predictable demand, satisfied by a different product. Depending on prices, goodbye to the profession of interpreter and to the language-teaching industries, including language learning in schools and universities.

Not professions of the past, by the way: they are seen right now as having a lot of future. You wouldn't discourage your children from entering any of them, as you would discourage them from acquiring a taxi license in Madrid. Disruption there seems much closer: for the same function, different products. But in 10 years from now...?

Technology may also generate new 'needs' to be satisfied (that is, new functions demanded). The hope for jobs in the already developed countries is that those new functions will require human working hours enough to compensate for the human working hours lost in functions automated. More precisely, 'human working hours' of workers in paid jobs, not of customers in their use of highly friendly applications.

Substituting clients' hours for job hours has already been a regular trend in modern capitalism. It allows for lower production costs (and thus, lower prices and/or higher profits). Supermarkets and self-service outlets for regular shops are a good example. Technology makes it much easier: computerized commerce for personal commerce, including outlets, maybe soon also supermarkets.

Regular paid jobs are thus not only competing against machines but also against the combination machines + customers' hours. It would be surprising if the final balance is positive for paid jobs. Difficult to guess: will increased demand compensate for sharp technological reductions in the human labor necessary to satisfy it? We must start planning for the scenery that the answer is 'no' or 'not here' (but 'yes' in countries with much poor population, where the demand may grow more quickly, but also the modern fraction of the workforce).

III. years is a rather short time span. Kids 12 years old now will be entering the labor market at the end of that period. But we need to design their secondary and vocational school just now, for the labor market they are going to find 10-20 years ahead (of which we can guess little).

Clearly in the middle term of a decade or two, the solution of 'learning by doing' is adequate for the branches more sensitive to automation. I agree that in-company training of the workers for the current way of doing things in each particular company must be reinforced, if possible certified with standards shared within each industry (though doing things better through non-standard procedures and applications is precisely a key for innovation and competitiveness).

But, in my opinion, schools and universities should move in the opposite direction: they must concentrate on the basics that allow for quick learning instead of offering 'updated' training. They have to teach the essential elements that would allow the students to get to grips quickly with whatever way of doing things they may find in private companies. Including more practices, internships, apprenticeships and the like in secondary, vocational and university education, is being done at the cost of leaving less time to learn the fundamentals.

IV. Then, there is an additional problem with private property. In the current state of political affairs, technology will develop along the path of biggest profit for the companies developing and/or incorporating it to their productive processes. It is an imperative of global economic competition in a context of national sovereign governments, that companies themselves cannot escape.

The lack of adequate skills in the workforce is certainly a possible limitation. But it does not guarantee that a job won't be replaced by a machine, or by a machine + customers' hours; it only guarantees that there remains a chance for the human worker. If other array for producing a demanded

function is more profitable, the job will be replaced never mind how many skilled workers are available for it.

In the middle run of 10-20 years we can think of increasing the capacity of the workforce for producing with better capital means. But part of the innovation consists in having more-friendly technologies for production, that is, technologies that can be used by less-skilled workers, avoiding possible scarcities of workforce and thus high salaries. The appropriation of the economic profits of higher technology by the workers as such (not as consumers) is going to be proportional to the scarcity of workers for each function. For the rest, the added economic value will go to the owners of the machines. There is a high economic incentive to need as few skilled workers as possible, that is, to make technologies as friendly as possible.

Given the technological dynamics, I think it is not reasonable in the long run to pretend that workers must indefinitely catch up with ever developing machines + customers' hours, in a way that makes labor a scarce – and well paid – factor in the production functions. Finally, consumption and social integration must be decoupled from paid jobs through:

a) Economic integration through citizenship, by means of some kind of 'universal income' funded with higher taxes on companies that produce high added economic value but few jobs;

and/or

b) Some kind of 'popular capitalism' that allows most people to get much of their income from a very disperse ownership of the capital of those same companies, and less from their paid jobs (if they have any).

That poses the question of the 'social meaning' of private property. In the Catholic Social Teaching (CST), private property is not an absolute right, but subject to the 'universal destination of goods'. If continuous changes in the production

functions erode the most important ways in which that 'universal destination' was happening in the developed countries (creation of well-paid jobs that support social integration through a combination of the private market with a Welfare State), the ways of property themselves will have to be changed. That discussion is already happening, and I don't think CST should be absent, proposing merely that either:

- a) the problem does not really exist;
- b) the solution is the workforce to catch up with technological accelerated innovation through education;
- c) the solution is to limit and control technological innovation.

In my opinion, technology is posing to CST a challenge of the same magnitude faced by Leon XIII in *Rerum Novarum*. Maybe the following phase of the challenge of the property of the means of production, that requires to go back to the fundamentals in order to build new answers.