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Chapter 1

Logistics, Life and Simulation

An overview on the times and on the state of the arts

1.1 Introduction

The expression “Logistics” has begun to be used far after mankind have begun to handle logistic processes, and it mainly results from the need man of 20th century felt to classify those processes in order to start treating them in a more scientific way. Taxonomy is many times the beginning of such courses.

Anyhow, as often happens with many other designations, the term “Logistics” is still on the mind of many authors as a kind of diffused idea about its meaning, even if some insist on searching for its ultimate definition, as it can be noticed on reading common literature on the subject. Also in the *Internet* it is easy to realise there is a wide range of such definitions, stated by a wide number of institutions, like the *Council of Logistics Management*¹, the *United States Department of Defence (DoD)*, the *Logistix Partners Oy*², from Helsinki, the *Websters Dictionary*, the *American Heritage Dictionary*, or the *Canadian Association of Logistics Management*, etc., only to name some of the dozens forming part of a

glossary maintained by *LogisticsWorld.com*³.

Although such diversity of opinions fails to free us from the initial confusion on the matter, it is somehow true that the term is in general accepted to reference an art, a process, a discipline or a science, other than a system or a network, what at least can be considered a positive aspect pointing to a certain agreement.

It is a fact that each one adopts the definition which seems more adapted to his/her purposes or convictions, similarly to what happens in matters of subjectivity, like love or friendship. Nevertheless, there was one of those definitions that touched me most due to an almost naïve simplicity, stated by a little Australian enterprise as follows: “*In an industrial context, logistics means the art and science of obtaining, producing, and distributing material and products in the proper place and in proper quantities. In a military sense, its meaning can also include the movement of personnel.*”⁴

Although this characterization already tries to declare a slight innocent distinction between civil and military “Logistics” (in reality most of the technology have been military driven, till now), the truth is that in

¹ Founded in 1963, is a preeminent association for individuals involved in Logistics and Supply Chain Management (<http://www.clml.org>).

² A consultancy agency, based in Finland.

³ <http://www.logisticsworld.com/logistics.htm>

⁴ <http://www.homercomputer.com.au>

general most people still correlate “Logistics” to the movements of troops, facilities and materials in the war. That is the origin of the term and perhaps still is the best way to visualise the idea behind it. In that sense, one can easily imagine “Logistics” as the overall process which is responsible for fulfilling the needs of the troops on their movements and their stay far from “home”, where goods and materials could be easily accessible. Thus, “Logistics” is the operations that “support” the cause.

Of course processes of this kind are already known at least since the time of the Romans, where huge amounts of materials and men had to be moved along huge distances, and for that reason thousands of kilometres of roads have been built across the Empire, to mention just a case, even if those processes could not yet be managed with the perfection of nowadays.

Logistics, therefore, deals with supplying the needs of people, and thus of producing, of storing and handling the products, of their transportation and delivery, as well as of all the sub-processes related with each of this processes, including information. Even if it has never been (and will never be) detached from the military, who still are the masters on this art, with the time Logistics have also naturally spread to civil organizations and systems, turning them more powerful, efficient and reliable.

More than a system, Logistics is thus a huge field of knowledge including different kinds of systems, different issues, and even diverse levels of reasoning, acting in a network of dependencies. That explains why it usually is studied in separated subjects, as procurement, production, storage,

delivery, forecast, sales, etc., as well as in some other financial topics.

In a certain way, one could say it would be impossible to simulate Logistics for the same reasons it is impossible to simulate Optics, for example, since both are in fact fields of knowledge, disciplines or arts, and not real systems.

Anyhow, simulation techniques have already been applied with success to some areas of Logistics, for instance, to warehousing, or to production, where normally the systems are already too complex to predict and characterize. And lately, simulation has also been used on studying the “Physical Distribution” across the Logistic network, a complex process including the transport of materials that since the 1960s (Metz, 1998) has evolved to what is nowadays referred to as the “Supply Chain”.

This chapter will introduce the fields of Logistics and Simulation in terms of their historical courses and relevancy, and at the same time in relation to the advances in computers, electronics, operations, political and social events, as well as to everyday life, in an interrelated holistic phenomena of development. This is expected to help the reader on better following the close relations existing between the two main fields, similar to what happens between science and engineering, for instance.

In between, also the “state of the art” in each matter will be presented, resulting from a literature review on Simulation and on Logistics and operations management, which slowly will be focused on the most relevant issues for the present work, that is, those related to the Supply Chain.

Finally, some considerations will be made about what probably will be the future tendencies in those fields.

1.2 The past

Half a century ago, in the decade of 1950, the big acceleration that would result in the current world of “all kind of achievable commodities” was beginning. Some years before, America and its allies had won *World War II* and that fact was reflecting on the people a wave of confidence and enthusiasm which clearly would lead to the prosperity of the following decades. The world was preparing itself for the craziest race of the 20th century, already in good use of the early *Scientific Management* concepts due to Frederick W. Taylor (1903), as well as dominating and practising notions like the *Statistical Sampling* for quality control (Shewhart, 1931), the *Economic Order Quantity* (EOQ) from Harris (1913), and many other tools from the field of *Operations Research*, as, for instance, the *Simplex Method for Linear Programming* developed some years earlier.

1.2.1 The days of 1950s

After the war, together with thousands of ordinary Jewish people, many engineers and scientists immigrated or were even invited to join the “*American Dream*” in order to develop and implement the new trends that would lead mankind to the big change. People moved in enormous ships from Europe to America, many of them carrying their entire families, and this mass flow of manpower made possible the fast progress of science, technology, medicine, politics

and many other aspects that became marks of the modern American society.

Also in terms of social life, the country was living one of its most promising times, inspired by an “*optimistic vision of a semi-Utopian technological future, including such devices as the flying car*” (Wikipedia, 2004a). A clad black-and-white *SuperMan* was frequently seen on the TV, while the cars in the streets exhibited a certain coloured flying machine style lent by the “*Flash Gordon*” movies of 1930-40, almost as in a dream. Henry Ford, for instance, already with a long practice in mass production, was in 1955 producing models like the popular *Thunderbird* as well as the *Fairlane* (shown in figure 1.1), while for the first time young girls could play with *Barbie* dolls.



Fig. 1.1 Ford Fairlane, from 1955

In the streets, the ordinary family man was a relaxed man driving one of these nice and styled heavy cars, while the movement in the towns was growing and the new standards of living changing the day-by-day life. On the minds of America, and in the world in general, there was a unique fervour to believe in a glorious destiny for mankind, obviously inspired by science, while figures like Humphrey Bogart, Kirk Douglas, Lana Turner, Paul Newman and Elizabeth Taylor were breaking the hearts of lovers around