

Animation 3.1

This diagram shows how operations have evolved over time to create eight main types of operation. Before the industrial revolution of the 18th century, in the craft era, there were three basic types of operation. The first was simple project, which refers to one off operations that were relatively unique. Examples of this would be house building or bridge construction.

Second there were job shops, which refers to operations based around skilled craftsmen making a wide variety of products. The classic example of this would be the blacksmith's forge, in which would be made iron products of all kinds – horse shoes, agricultural tools, and other ironwork.

Finally, there was batch process, an operation which produced batches of a product at a time. The classic example of this is the brewing process, in which several gallons of beer are brewed in a single batch.

With the advent of the industrial revolution, we entered the mass production era. Four new types of operation emerged during this era.

First, projects grew in size and sophistication, so that complex projects emerged. The construction industry started to use new materials and methods so that very large buildings, such as so-called skyscrapers, and major infrastructure projects, so as power stations, could be constructed.

Second, more and more products were made on a batch production basis, as demand grew, interchangeable parts became available, and processes were simplified. Engineering works producing components for use in motor car production would be an example of this.

Where demand was very strong and it was possible to simplify fabrication, assembly line production became possible.

Finally flow processes also developed at this time. This entails the more or less continuous production of output, often using chemical processes, as in oil refining and steel production.

What is often forgotten is that whilst some industry sectors moved away from craft era type operations, these process types continued – either in some industry sectors or due to small operators providing niche products and services. For instance, Rolex watches are still made using craft skills.

Finally we arrive at today, which we have termed the strategic operations era. What we find now is strategic operations, that often combine elements of assembly line operation – to produce in high volume and keep costs down – in combination with job shop – in order to provide customers with more variety.

Some of the operations strategies adopted during this modern era have been given specific names – such as lean manufacturing, agile production or mass customisation.

This is not to say that strategic operations have replaced these process types.

All four mass production types can be found today. So, for instance, in the auto manufacturing sector cars may be craft built by hand in a job shop operation, as is the case with Morgan Cars, or mass produced on assembly lines like most makes of car, or customised on assembly lines, as is the case with the BMW mini.

The diagram also illustrates two other ways of thinking about process type. First, the extent to which the operation is producing a single unique output, as is the case with most projects; or producing multiple outputs, as in the case of job shops, batch operations, assembly lines and flow processes.

Second, it identifies if production is discrete, that is to say producing clearly identifiable units of output, or whether it is a flow process, producing a continuous flow of output.