as the unit of selection, like Basalla's, because he holds that technological change is better analyzed as a change in techniques than as a change in artifacts. New techniques for washing one's hands, training animals, or navigating the stars may not involve any artifacts at all. Moreover, he claims, many artifacts are meaningless without specific instructions, and only gain their identity when a series of "how-to" instructions are attached to them. Mokyr's theory has been inspired by developments in evolutionary epistemology, as well as by evolutionary approaches to economics. Mokyr's aim is to develop an evolutionary framework that is helpful in analyzing the fundamental causes of technological change. Like Basalla, he believes that evolutionary biology provides a useful "analogy" or "metaphor" to this effect.

Following Gilbert Ryle, Mokyr makes a distinction between "how" knowledge and "what" knowledge. He argues that society has developed two basic kinds of knowledge to help it cope with the world. The first kind is what he calls "useful knowledge". This is "what" knowledge that resides either in people's minds or in storage devices from which it can be retrieved. Useful knowledge consists of observations and classifications of natural phenomena, and regularities and laws that make sense of these phenomena. It includes scientific knowledge, but also engineering knowledge, including quantitative empirical relations between properties and variables. Mokyr calls the total set of useful knowledge about the world in human minds and storage devices Ω (Omega). Next to useful knowledge, there are techniques, which are a form of "how" knowledge. Techniques are sets of instructions, or recipes, that tell the user how to manipulate aspects of the environment to attain a desirable outcome. Like "useful knowledge", techniques reside in people's brains and in storage devices. For example, a "how to" manual is a codified set of techniques. Many techniques, however, are tacit and unconscious. Mokyr calls the total set of techniques that exist in a society λ (Lambda). Mokyr believes in the primacy of "useful knowledge" over techniques, or of Ω over λ. That is, he believes that there usually is a dependency of techniques on what-knowledge that has made the technique possible. For instance, he believes that the technique of bicycle riding is in some way dependent on the mechanical principles of bicycle riding that made the production of bicycles possible. Techniques, in Mokyr's analysis, are the end-product of knowledge in Ω. Ω defines what a society knows, and λ what it can do.

Mokyr likens "useful knowledge" to the genotype and techniques to the phenotype. He believes that an evolutionary theory of technology must in some way capture the genotype-phenotype distinction by including a distinction between some underlying structure that constrains a manifested entity. In technology, the underlying structure is Ω and the manifested entity is λ. There are mappings between Ω and λ when one or more elements in Ω give rise to one or more elements in λ. For example, the now-defunct humoral theory of disease gave rise to a series of medical techniques, including the bleeding and purging of patients suffering from fever. Mokyr admits that the relation between Ω and λ deviates in several ways from the genotype-phenotype relationship. For instance, a gene and the phenotypic trait it gives rise to must be part of the same carrying organism. But if an individual masters a technique, he need not be knowledgeable of the "useful knowledge" that formed the basis of it, and this knowledge may be stored in other minds or storage devices, or may even have been lost.

Techniques, Mokyr claims, are subjected to selective pressures. When a technique has been used, its outcome is evaluated using a set of selection criteria that detemine whether it will be used again or not. This, he holds, is similar to the way in which selection criteria pick living specimens and decide whether they survive and reproduce. He does not hold it to be important whether this selection occurs by the same human agent who used a technique previously or by other human agents. Agents may again select techniques that they have used previously, and other agents may learn or imitate techniques, which is also a form of selection. When a technique is selected again, it is reproduced, in Mokyr's terminology. So reproduction of techniques may take place through learning and imitation, or through reselection by a human agent. Mokyr points out that the analogy between biological selection and the selection of techniques breaks down on an important point: selection of techniques is not blind, but is performed by conscious units, firms and households that do the selecting. Humans are, in this model, not the selected but the selectors. Mokyr claims there is also selection between elements of Ω. Here it is not their perceived usefulness but their perceived truth or veracity that determines whether they are conserved, and whether they are used to create techniques. Their truth is tested by established rules in society, for instance rules of science.

Mokyr is not fully clear on the conditions that create variation (or "innovation"). He calls the creation of new "useful knowledge" mutation, and defines such mutations as "discoveries about natural phenomena", but does not specify a mechanism for it. He does suggest that the creation of new techniques often results from new combinations of knowledge in Ω. He refers to the possibility of a general drive in human agents to devote resources to innovation, but does not develop this idea. Moreover, new techniques need not result from new (combinations of) knowledge. Techniques can also change through experience and learning by doing, or may emerge from "pure novelty" like mutations. The use of new techniques may also influence the set of "useful knowledge". For instance, the invention of telescopes impacted knowledge of astronomy, and early steam engines influenced the development of theoretical physics. So technological evolution, in Mokyr's theory, may also involve Lamarckian feedback mechanisms from phenotype to genotype, or from λ to Ω.

Mokyr's theory, like Basalla's, holds that the basic three ideas of Darwinism apply in some form to technological change. There is phenotypic variation between techniques, techniques have differential fitness, and there is some form of heritability in that subsequent generations of techniques tend to resemble their predecessors. Unlike Basalla, Mokyr upholds the genotype-phenotype distinction by putting what-knowledge and how-knowledge in those two roles and assuming there is a mapping-relation from what-knowledge to techniques. He is therefore able to adhere to some principle of genetic reproduction, according to which most techniques depend on underlying knowledge, and their reproduction often depends on the presence of this knowledge. Mokyr is also able, better than Basalla, to adhere to a principle of mutation and recombination. Mutations occur to Ω, through new discoveries, and knowledge in Ω may be combined in new ways to yield new techniques. This analogy breaks down, to some extent, since techniques may also mutate and subsequently reproduce without any changes in underlying knowledge.