

The Return of *Homo Economicus* and the rise of Unbounded Rationality

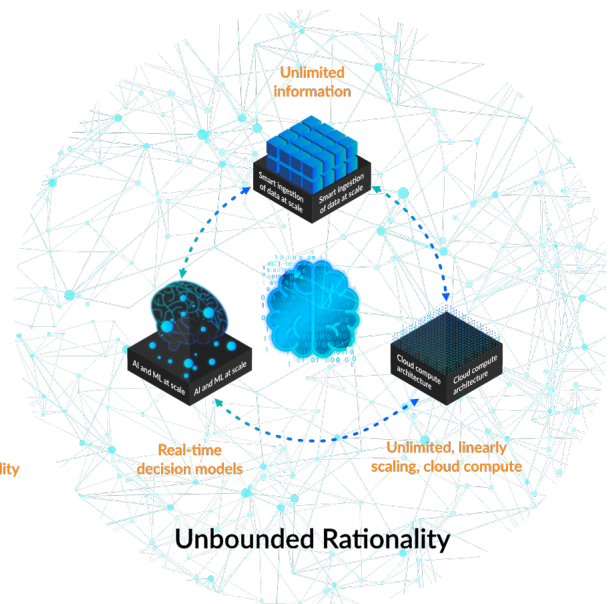
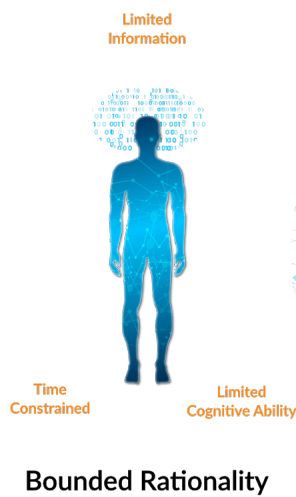
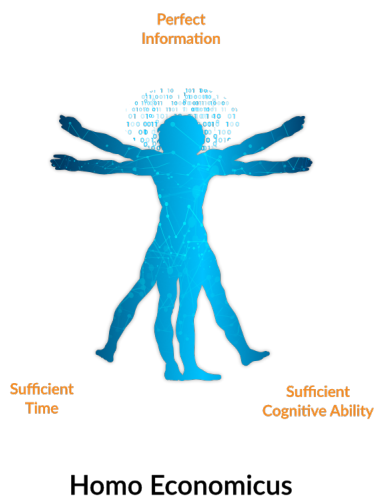
— Paul Burton | Chief Executive Officer, Mastech InfoTrellis

In the beginning there was *Homo Economicus*. *Homo Economicus* was an extraordinary man. When interrogating an issue, he would always have perfect information and because he was endowed with great sagacity, he was able to consider all the implications of every action he contemplated. With unlimited cognitive ability, he could instantly calculate the optimal action to take to maximize his personal welfare. Because *Homo Economicus* was an extremely self-interested actor, his behavior was always entirely foreseeable.

Homo Economicus's peculiar abilities were foundational to the development of neoclassical economic theory, before being eschewed in favor of Bounded Rationality. But perhaps modern technology has made *Homo Economicus* relevant again, this time in a more practical way.

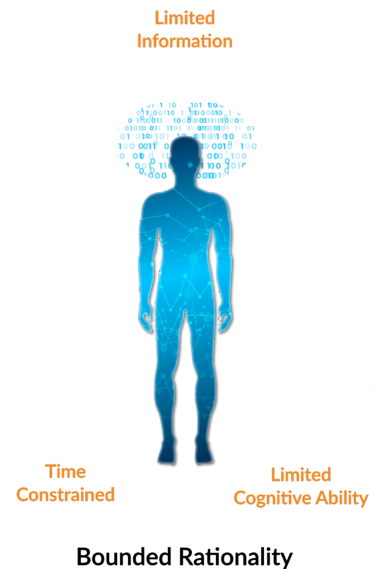
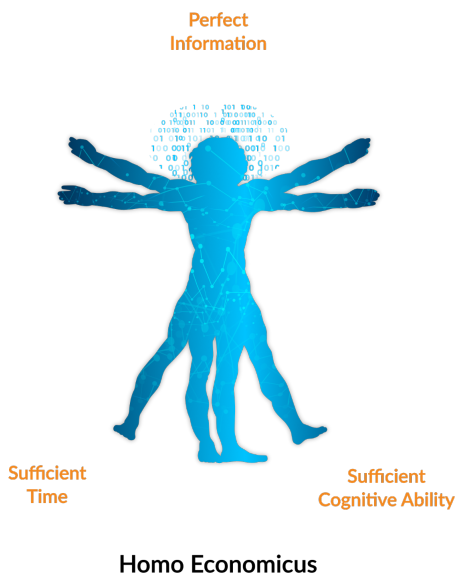
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Homo Economicus gives way to Bounded Rationality

Homo Economicus was an idealized conception of man constructed by economists to give logic and coherence to their subject. Without basic assumptions about how an economic actor would behave under a variety of circumstances, economics could not advance as an academic discipline. So *Homo Economicus* was made foundational to neoclassical economics, despite never being real.



because he cannot access the information he requires (though this may also be true), but because he can not access all the information that he requires and compute an optimal decision in a reasonable amount of time. Consequently, man's decision making is always flawed and unnecessarily laden with risk; it is never optimal.

Notwithstanding, *Homo Economicus's* time was limited. Ultimately, *Homo Economicus* would fall out of vogue because his peculiar abilities were simply too far advanced from those of an ordinary man. Whereas *Homo Economicus* always had perfect information, man rarely had either perfect or complete information. *Homo Economicus* could foresee the implications of his contemplated action with perfect clarity, but man could not. *Homo Economicus* could calculate in real time precisely the benefit that would accrue to him from his action, but man could not.

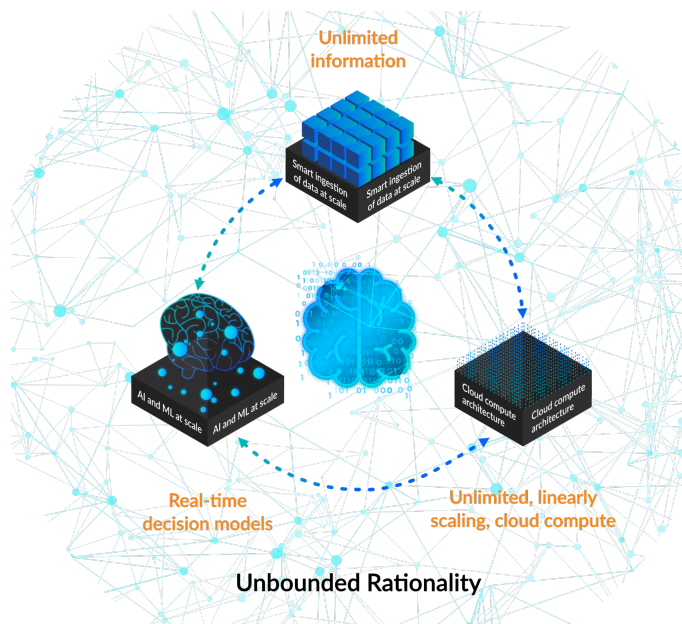
The differences between *Homo Economicus* and man were simply too stark for the foundation to hold. So the foundation shifted and economics adapted accordingly. Bounded Rationality, with its more realistic assumptions, replaced the stylized assumptions carried theretofore by *Homo Economicus*.

Bounded Rationality became the new foundation. Bounded Rationality recognizes the limited information that man has available to him as he makes decisions. Importantly, however, man's information is limited not

Most importantly, as we will see, constraints on man's ability to consume information have the deleterious effect of limiting his ability to learn and, therefore, to adapt and coevolve with his environment - quickly, and at scale. Increasingly, in this digitized and highly connected world, an enterprise's ability to quickly (learn and) adapt is becoming its most potent weapon against its rivals. CEOs that fail to recognize this do so at their peril.

The return of Homo Economicus and Unbounded Rationality

The world has changed, but certain concepts remain timeless. As it turns out, *Homo Economicus* was merely ahead of his time because it is now fathomable to have practically unlimited information and cognitive ability, and to compute optimal decisions in near real time. Technology has allowed us to grasp this reality, if only we consciously architect and deploy our technology infrastructures to enable it.



This is particularly important today as the volume of data continues to grow exponentially, with no end in sight. Nevertheless, despite an awareness of this phenomenon by business leaders, there has been precious little attention paid and investment made to fully exploit in an integrated manner, in its appropriate context, all the data that is readily available. For some business leaders, this neglect is now separating them from their peers who have embraced the consumption of information at velocity and scale to drive enterprise learning.

Today, three classes of technology are particularly relevant for enterprise learning:

First, big data technologies play an indispensable role. Today's big data technologies make it possible to identify, acquire, and deliver structured, unstructured, graphic, video, and sound data (or information) in near real time, or better, at velocity and scale. As our digital world becomes increasingly instrumented, acquiring and consuming telemetry in real time is increasingly an imperative; nay, it is an indispensable enterprise competence, because it is the first step in the learning process.

Second, massively parallel and scalable compute architectures characterized by today's cloud architectures are increasingly indispensable. The exponential growth of data of all types is a well known phenomenon that is expected to continue for the foreseeable future. The idea that any one company can build and maintain the technology infrastructure needed to consume the volume and velocity of data and information reasonably necessary to drive their learning process and, hence, their adaptation and evolution as

an enterprise, is a fleeting one. Cloud computing is not optional for an enterprise that intends to thrive in this digital age.

Finally, third, advanced analytics, including machine learning and other methods for developing and exploiting artificial intelligence, are relevant. The process of harnessing and exploiting an enterprise's corpus of data and information cannot be complete, nor will it be feasible, without leverage from analytical techniques, particularly artificial intelligence and machine learning techniques that leverage huge volumes of data and information and, hence, rely on cloud architectures for their efficacy.

Modern technology has resurrected *Homo Economicus* and made him relevant again. Bounded Rationality has proven to be a relatively short transitional phase that is now reaching its conclusion. The result is that enterprises must now grapple with the reality of the one imperative they cannot escape: learning at scale and velocity. Successful enterprises have always done this commensurate with the velocity of their industry - or the macro economy *writ large*. That is what explains their survival. But the technologies that were briefly described above present a wake-up call for enterprises in business as usual mode. The pace of change has accelerated and the world will abandon the laggards.

The curve has bent. Enterprises that leverage these technologies to increase the velocity of their learning will put consequential distance between themselves and their competitors. Too much distance will be tantamount to an insurmountable barrier for the laggard. The greater speed of execution and the (relatively) reduced cost structure achieved by the enterprise with the greater learning velocity will ensure the laggard's demise.

The speed of enterprise learning is the most important issue for a CEO.

Information Architecture is Foundational for Enterprise Learning

A very simple model of learning is depicted by the inner loop of the graphic immediately below. An actor observes their environment, orients to an issue area of particular concern, decides upon an action to take, and then takes the action. Once the action is taken, the process starts anew. In fact, the process never ends; it loops forever.

After taking an action, the actor evaluates the success of the action by observing the (new) environment. Based on what is observed, the actor takes another action and the process continues. After some

number of iterations through the loop the actor and the environment converge or align on the actor's expectation. Learning is manifest in this outcome. The speed at which this outcome is achieved is the speed at which the actor has learned.

A third implication is also evident here. If an enterprise is looping quickly through the process, it can make bad decisions and as long as it corrects them on future iterations, convergence or alignment will still occur. So in this case, speed lessens the impact of bad decisions. Consequently, in this sense at least, speed matters a lot; but learning is still the *sine qua non*.

The need for learning at velocity and scale is not lost on McKinsey either. "Organizations that make minor changes to the edges of their business model nearly always fall short of their goals. [Moreover,] tinkering leads to returns on investment below the cost of capital." (McKinsey & Company, *Digital strategy in a time of crisis: Now is the time for bold learning at scale*).

So be bold! Making "just noticeable differences" each iteration through the learning loop is a recipe for mediocrity at best, and failure at worst. CEOs need to go all in with their Chief Information Officers to enable enterprise learning, because if they do not, there is a large risk that they will face a real competitive crisis in relation to their competitors that do.

All of this begs the CEO for an answer to the following questions:

Does your enterprise information architecture support enterprise learning at velocity and scale?

What is your enterprise's learning and knowledge strategy?

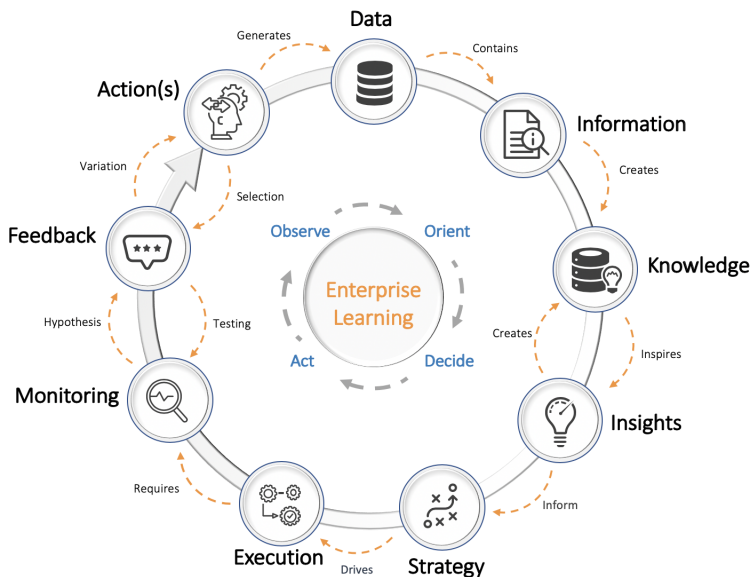
What is your strategy for translating learning into effective action?

How do you know, in real time, how effective your (decisions) actions are?

The outer loop of the graphic shows the role that data plays in the learning process. As more data is consumed, more information is acquired and more knowledge is created. The greater the amount of knowledge informing the strategy process, the better the actions will be that are selected to pursue specific business objectives. Data is everything!

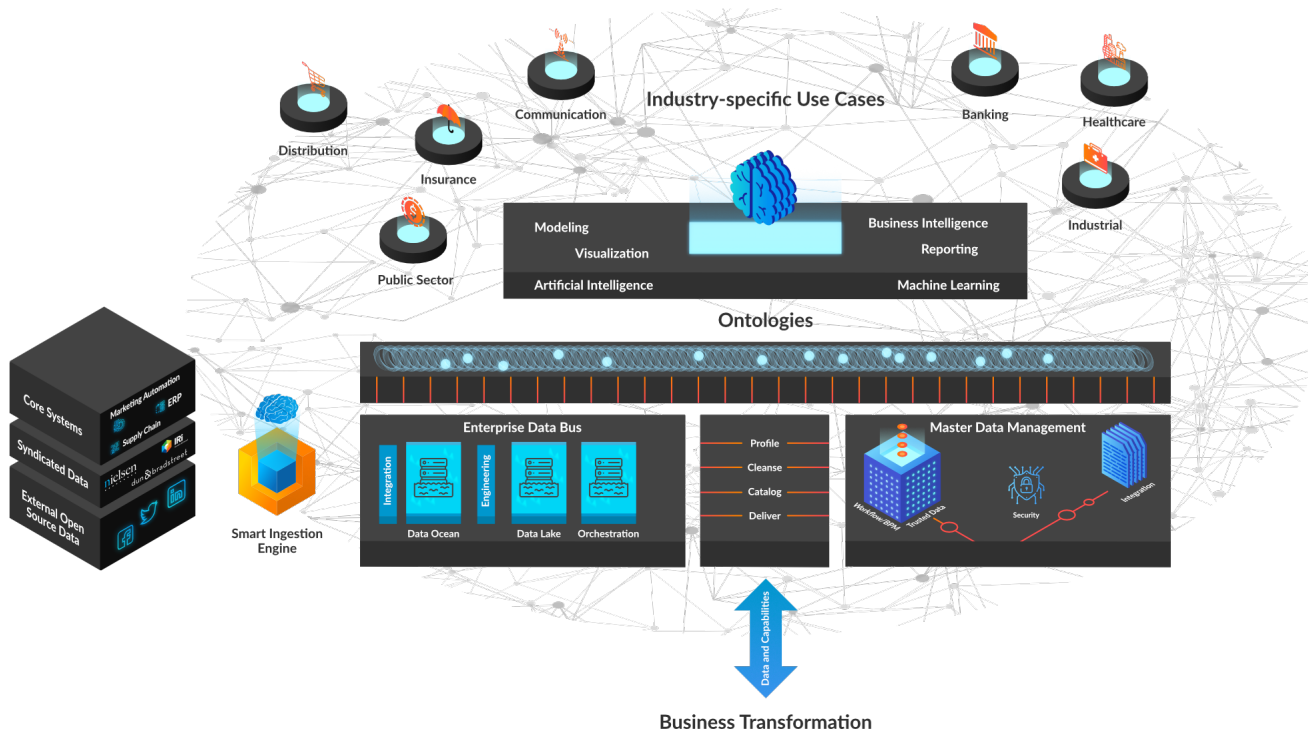
The enterprise that is able to acquire and leverage data at scale is the best equipped to learn at velocity. This has significant implications. From the inner loop of the graphic we know that at the conclusion of each loop an action is taken. After the action is taken, the environment is evaluated to understand the impact of the action so that on the next iteration of the loop the action then taken can be designed to bring the enterprise and the environment into closer convergence or alignment with the enterprise's expectation.

There are two significant implications here, as well as a third that should not be overlooked. First, as long as the enterprise designs an appropriate action, convergence or alignment will occur. In other words, as long as the enterprise learns something from each iteration of the loop and acts appropriately, convergence or alignment will occur - at least eventually. Second, the faster the enterprise can cycle through the loop, the faster convergence or alignment will occur. Speed matters a lot, but only if learning occurs.



We Architect Enterprise Intelligence

At Mastech InfoTrellis we work to expose the entire corpus of enterprise data and leverage it with state of the art techniques from Decision & Data Science to accelerate enterprise learning. We would love to talk with you about it.



Author

Paul Burton, Ph.D., is the Chief Executive Officer at Mastech InfoTrellis. Paul is a seasoned industry leader with 20 years experience at Fortune 25 companies. He has held global leadership roles at Genpact, Hewlett-Packard, and IBM.

About

Mastech InfoTrellis partners with enterprises to help them achieve their business objectives by leveraging the power of data to derive deep, analytical insights about their business and its operations. We accelerate business velocity, minimize costs, and drastically improve corporate resiliency through personalized, process-oriented programs, consisting of strategy, data management (including master data management), business intelligence and reporting, data engineering, predictive analytics, and advanced analytics. Part of the NYSE-listed, \$177.2M, digital transformation IT services company, Mastech Digital; we drive businesses forward around the world, with offices spread across the US, Canada, India, and Singapore.