

The second (fundamental) reason why we must learn to think in a new way is that **materialism** is, plain and simple, *wrong* thinking.

It leads to *wrong* conclusions! I'll explain why by sharing a *vignette*.

Jay Forrester spent a half century-long career at MIT.

From the moment he entered it as a graduate student in 1939, to the moment when he retired as its celebrity professor; having in the 1950s, as the leader of MIT's Whirlwind project, contributed a number of inventions to the then budding digital computer revolution. What I'm about to share is what he did next, during the 1960s.

Right around the time when Forrester began to make computer simulation models of societal systems, a colleague who used to be the mayor of Boston moved into an office close to his. So the two men talked during lunch breaks; and this new colleague told Forrester how, as a mayor, he noticed this curious thing: When a recurring problem was treated in an *obvious* way (by eliminating its apparent causes or alleviating its unwanted effects)—the problem would often get *worse*! An example was homelessness in Boston city core; which got *worse* when affordable housing was provided.

Forrester made a computer simulation model of this situation; and experimented with it; and found out that the model *reproduced* the counterintuitive behavior his colleague talked about! This encouraged him to experiment with simulation models of society's *other systems*; which led to similar results.

It was Jay Forrester who created the first draft of the world system simulation model that was used in *The Limits to Growth* study; he quite literally drew it on the back of an envelope during his flight from The Club of Rome's 1970 meeting in Lausanne, Switzerland, back to Boston. But Forrester was *not* one of the authors of *The Limits to Growth* book.

What urgent chore kept him from this important task?

While Dennis Meadows supervised the simulation study—Forrester was busy *intervening in the system* of democracy!

In 1971 he wrote a report titled “Counterintuitive Behavior of Social Systems”; and lobbied with the American Congress to hear his message:

“It is my basic theme that the human mind is not adapted to interpreting how social systems behave.”

Three **keywords**—**system**, **complexity** and **emergence**—will pinpoint what Forrester saw; and attempted to tell to his country’s political leaders and legislators; which happened to coincide with *the* main **point** the systems scientists have been trying to tell us all along:

The reasoning **mind** *cannot* comprehend **complex systems** (which include the society, the economy, and our culture and organism and life itself).

Systems scientists explain this, and the word **complexity**, by talking about “(feedback) loops”—where, say, we want to “solve” problem *A* (homelessness in Boston) by doing something about factor *B* (lack of housing), which apparently “causes” it; but it turns out that *B* influences also *C*, which influences *B* in a *different* way than *A*. “Nonlinearity” too contributes to **complexity** and counterintuitive behavior of **complex systems**—where, say, *X* might influence *Y* positively when it’s small, and *negatively* when it becomes larger.

The counterintuitive behavior of a **complex system** is said to **emerge** from the system as a *whole*; it *cannot* be understood by examining its parts and the way they interact. “Life”, I explained to Noah, “is an **emergent property** of the **system** called Noah; take away *any* of its vital parts—and Noah will no longer have life as property.”

It is of course possible to isolate and comprehend the pairwise relationships of a **complex system**'s parts; and even to model them by mathematical equations; but the system of equations that results is itself **complex**—impossible not only to *comprehend*, but also to *solve* by mathematical reasoning or “analytically”.

Computer simulation has to be used.

But that's not how we make decisions in daily life and politics!

“Man has acquired such decisive power that his future depends essentially on how he will use it”, Aurelio Peccei warned. The **materialism**'s way to use the **mind** served us superbly for *acquiring* the “decisive power” (by comprehending, through the sciences, the mechanisms of nature; and by harnessing them through the mechanisms of technology).

It leads to *wrong* decisions when we use it to *direct* this power.

When we apply it to society and economy, and to culture and life itself—i.e. to all those **complex systems** that determine what *the effects* of our actions will be like.

We act—and “problems” **emerge** as “side effects” of our “successes”!

The **mind** wants to see the “truth”; and it seeks that “Aha!”; and experiences it *only when it isolates* its subject of interest from its larger context; only when it *ignores* the big picture and focuses on a detail.

Materialism—the way we use the **mind**—is *the reason why* we have ‘candles’ as ‘headlights’!