



To Transform the System, Change Our Brains

by John R. Ehrenfeld

Are you aware that there are two of you?
Two different people live inside your skin.
One, cool and controlling — rational, too;
T'other, empathetic, unlike its twin.
The left brain offers a world, abstracted,
Defined by dead reductions from the past.
Because all meaning has been subtracted,
You're run by rules memory has amassed.
The right brain connects you to the present
Where the real you acts in the here and now.
Unlike the rule-bound left, you can invent;
Now, the creative, caring you can show.
Our modern culture has suppressed the right.
That means there's little flourishing in sight.

— John R. Ehrenfeld, "Fraternal Twins"¹

What System?

Except for revolutions, transformations come slowly, following shifts in the worldview underpinning cultural systems. Transformations differ from mere fixes in that problems disappear or dissolve, obviating the need to deal with their symptoms.

Most transformations arrive unannounced. To deliberately create one, the first step is to identify the system in which the problems originate. Since, except for the cosmos, one system is always nested within or interacting with another, discovering the relevant system can be difficult, especially for problems that management guru Russ Ackoff called "messes."²

A practical way around this obstacle is to reveal the root causes that always lie in the system or subsystem that needs to be addressed. Easier said than done, particularly in complex systems like the global ecosystem, but some established practices can help.

The Toyota Production System (TPS), of which more will be said later, offers a pathway to the root causes.^{3,4} The method is simple but very powerful. Ask the question, "Why has this [problem] happened?" repeatedly until the last answer seems to rest at the roots. Toyota calls this the "5 Whys" because it rarely takes more than five iterations to get to the bottom of things.

Given the focus of this edition of *Amplify*, let's start with the obvious question: "Why is the planet struggling?" One possible answer is that its metabolism (the flows of energy and materials through the global socio-economic-environmental system) is out of whack. "But why is that happening?" Because the global production and consumption system is stressing the planet beyond its ability to sustain itself. The questions usually stop here, with people believing they know the right system to address. We try to improve the way we make and consume stuff (eco-efficiency), or we try to repair the global ecosystem (geo-engineering). Neither is promising, since we are ignoring what Einstein said: "We cannot solve our problems with the same thinking we used when we created them."

If we want to get past this roadblock, more questions are needed. Since humans and the Earth have coexisted for a very long time, the next question might be, "Why is this happening now?" How about, "Current human activities are upsetting the natural homeostasis of the planet." "But why after all these years?" "Because this mess is an unintended consequence (economists call them externalities) of what have become normal behaviors." "So why is this happening?" "Because we are not conscious of the connections between what we do and these side effects." We are almost there. Finally, "Why are we not conscious of both our connectedness to the problem and the impact we make when we act? Don't we care about it?" In the past, cognitive scientists, psychologists, or economists would answer this by arguing that we are, indeed, conscious of the problem, but the rational calculus we use to decide what to do at any moment doesn't value the world sufficiently.

Questioning virtually always stops here because our present model of the brain and its fundamental rationality is taken for granted. This is why most responses to global warming and other big messes try to change the rational outcome by internalizing the externalities or punting the ball to engineers or other technocrats to stanch the bleeding.

Because how we think about thinking has been accepted as a given, no one asks the question, "Can

we change how we think?" If anyone bothered to ask that, the answer might be, after the laughter subsides, "No, we can change what we think about, but not how we do it. We have known how the brain works since Descartes gave us a basic model." End of story. Or is it?

No, this is not the end! It may seem far-fetched, but the root cause of messes like global warming is to be found in a new understanding of the human brain, only recently revealed.

Stunning scholarship by British psychiatrist and philosopher Iain McGilchrist about how the human brain works helps explain why we have gotten into this mess and, more importantly, offers a way to change the trouble-causing behaviors. GDP and material wealth do not have to rule the roost. The system we must examine is the brain itself and how it controls our actions, which are always the proximate cause for changes in the world.

What Needs to Change?

McGilchrist has written two seminal books on how the human brain works (not the way we think it does) and the consequent ways (plural) it shapes the reality it produces.^{5,6} His basic claim is that each brain hemisphere attends to the world differently, offering up its own version of what we have come to believe is the "real world." That finding is stunning because it flies in the face of the model that has guided philosophers, natural and human scientists, and others throughout what we call modernity.

The modern world we exist within is largely the product of only one of the hemispheres: the left. This is the side that carries the beliefs on which we have built our settlements, economies, and cultures. Looking back, few would disagree that our species has progressed from a more primitive state to the wondrous world of today. But McGilchrist is greatly concerned, as are many others, that such progress has also led us to the brink of disaster, largely because the world the left hemisphere presents to us does not match what is really out there, the reality that ultimately decides the fate of our actions.

Reality is the final arbiter of success and failure, no matter what we think. Do our actions work as we intend them to do and, critically, in today's overcrowded planet, do they produce unintended outcomes that threaten our existence and that of the Earth? In many

key areas, the answer is no to the first part and yes to the second.

The conclusion above rests on key differences between the hemispheres. The first is that the right hemisphere is connected, via the senses, to the world of phenomena; that is, the world of everything out there. The left is not so connected to the external world, but will, nevertheless, produce its own version of a world whenever called upon for input. (Note: when I refer to the left or right hemisphere as doing something, it is only a metaphor for actions attributed to the dominance of one side or the other.)

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The left's world is built up by aggregating decontextualized objects; these are isolated notions with which it constructs the world it "re-presents" (McGilchrist's phrasing) to the actor. It knows how the parts interact, based on the myriad of cause-effect laws modern science has produced, but not how the system as a whole is working. Whatever re-presented world it constructs lacks the contextual richness and aliveness of the real world. Only the right hemisphere can capture that, particularly the living world of which we humans are just one species.

Most of what we do every day meets our intentions because the re-presented world is close enough to the real world. The agreement between the two comes from the repetitious nature of our individual lives, both within and outside of institutional settings. As we act, the right hemisphere reports to the left, which plucks out and abstracts pieces from the report and stores them for use in future action. When these routine or habitual acts are repeated (brushing one's teeth, driving a car, punching a time clock), the contents of the left hemisphere become ever more refined and accessible. When these separate pieces can be reliably recalled, the action is deemed to have been "learned."

The dominant hemisphere's mode of operating at the individual level coalesces into the character of a society and the subordinate institutions guiding the hurly-burly of daily existence. Over time, the culture and individual behaviors reinforce each other, more and

more firmly embedding that hemisphere's worldview as the frame for thinking and acting.

Modernity reflects the dominance of the left hemisphere. At its most foundational level, its worldview can be traced to Descartes, who led us astray when he proposed two ideas that underpin almost everything we moderns do: (1) we capture reality in our rational minds, and (2) both our own species and the world we inhabit can be treated like machines, subject to the rules science reveals. One way or another, our attempts at solving problems devolve into trying to fix the machine.

If we are to make headway against the tide of unsustainability, the right twin must be returned to its place of master.

The divided-brain model implies that we are not a single self. Rather, we are, metaphorically, a pair of fraternal twins, one directed by the left hemisphere and the other by the right. The left twin's world is a collection of lifeless resources to be used in attaining whatever intentions it has at the moment. It treats the world as a machine it runs to fulfill its intentions. The right twin acts as if he or she were part of a highly interconnected living system, aware of the concerns of the component parts. This twin's actions are empathetic and caring, taking the needs of other entities into account.

The left twin believes it knows how its actions will turn out, but it's that misplaced certainty that leads to unintended consequences. The right twin acts on the basis of what it sees at the moment, generally augmented by knowledge it accepts from the left. It understands that the desired outcome is a possibility, not a certainty. The left is a rational, analytic, calculating actor, living in its own inner world; the right is a pragmatist, always using its connections to the real world to discover what works most effectively. Learning involves both sides, with the left creating the abstract facts we use from whatever the right presents to it.

The mastery of the right is behind every great move in history. Only it can create new paradigms, leaving the left to build upon them. McGilchrist argues that, historically, cultures have vacillated between left- and right-brain domination, but that, currently, the left hemisphere's tight control has become dangerous:

However, as I also emphasized at the outset, both hemispheres take part in virtually all "functions" to some extent, and in reality both are always engaged.... I take it for granted that the contributions made by the left hemisphere, to language and systematic thought in particular, are invaluable.... But these contributions need to be made in the service of something else, that only the right hemisphere can bring. Alone they are destructive. And right now they may be bringing us close to forfeiting the civilization they helped to create.⁷

If we are to make headway against the tide of unsustainability, the right twin must be returned to its place of master. But can a change like that at the deepest roots really change the system at the level we are concerned about?

What Kind of Change?

This issue of *Amplify* is about transformational change, but we must ask what that really means. In complex systems theory, such change refers to the shift from one stable attractor to another. In the vernacular, it's from one regime to another. The attractor that has kept the planet stable for ages is being altered from within. We are moving (or already have moved) from the Holocene epoch to the Anthropocene, in which the planetary ecosystem is being affected by human activities.⁸

Today's concerns arise from the possibility that global warming will, itself, trigger a revolutionary transformational change, throwing human civilization into a new regime that cannot support the kind of cultural world to which we have become accustomed. To avoid that, we must create our own transformation, starting with the underlying worldview that created modernity (the name describing the culture of today's highly industrialized world), recognized as the source of the problems being addressed here. Modernity grew out of the ideas created during the Enlightenment, but over a long period. As McGilchrist notes, the same ideas that led to the wonders of modernity are now creating threatening forces.

Fortunately, we now have a new worldview that can create a regime in which we move toward, not away from, a flourishing world of flourishing people. First, the mastery of the right hemisphere must be restored. Then, the divided-brain model can be used to redesign the institutions guiding quotidian behaviors to produce outcomes more connected to and closely aligned with reality.

As behaviors begin to show care for the world, instead of using it, threats should lessen and signs of flourishing should appear. Exactly how this process will unfold is unpredictable, but it should be clear that actions based on care inherently aim at healing, comforting, sustaining, and so on, while those using it for instrumental intentions have opposite impacts.

However we begin, intervening in a system as complex as the global socio-environmental system is unlikely to produce the desired transformation immediately. Getting the desired results will require a long process of continual adjustment. Familiar continuous improvement systems like TPS, total quality management, Lean manufacturing/thinking, pragmatic inquiry, and other programmatic forms are built on such a process. They all rely on the right hemisphere to connect to the outside world and begin to understand it, and, only then, select relevant knowledge from the left's existing storehouse.

Each step in continuous improvement systems is merely a possibility that the outcome will be as expected, so constant monitoring is required. Continuous improvement implies caring, acting out of concern, and being empathetic and flexible. Without knowing what is happening out there, left-brain-guided actions may, and often do, make the situation worse.

What Should Business Do?

As I wrote in *The Right Way to Flourish: Reconnecting with the Real World*,⁹ business, among other institutions, has an especially important role in enabling the shift from left-hemisphere domination to right-hemisphere domination. The basic strategy is obvious: strengthen the right hemisphere and inhibit the left in anyone the business can reach.

It is worth repeating the reason why. The right hemisphere of the metaphoric brain of firms will track and reflect changes in its employees' brains, so firms must introduce new practices requiring mastery of the right hemisphere. As that shift occurs, the negative consequences of the firm's actions should begin to abate. Because employees' bodies and brains are always part of them, benefits will spill over beyond the workplace: more caring, more effectiveness, and, eventually, the emergence of flourishing.¹⁰ In any case, businesses should continue to become more eco-efficient and innovative while understanding that these achievements will not address the systemic nature of unsustainability.

In the sections below, I briefly outline a few pathways for change (part of shifting from left to right is to stop looking to experts for answers). The first step is to suspend your old beliefs long enough to let these new, challenging ideas about the brain enter. If you do, I am confident you will be as equally stunned by their power to understand and create as I have been.

Mindfulness

Mindfulness practices strengthen the right hemisphere while shutting down the left. Some businesses have started on this path, not for the cognitive impact directly, but because mindfulness practices can be broadly beneficial. Benefits include sharper reflection and focus, improved stress management, fewer sick days, more employee engagement, higher levels of trust, and greater mental agility.¹¹

Importantly, they can enhance social responsibility, a form of caring that transcends profit.¹² Installing and practicing mindfulness is truly a win-win-win game. The individual members of the firm will lead less stressful and more productive lives, the firm will prosper, and the social and environmental worlds will be better taken care of.

Pragmatic Practices

We must also begin or increase the use of pragmatic decision-making and problem-solving systems. Pragmatic inquiry is a way to connect to the world and care for what you find out there. As noted above, pragmatic inquiry/thinking relies on the connectedness of the right hemisphere to ensure that any actions reflect the immediate external world, beyond facts and theories abstracted from past experience.

Programs like TPS or its generic version, Lean thinking, include practices that have been tested.¹³ Users of the firm's offerings and others with concerns about them should be involved in their design so that the products serve what the users care about, not some manufactured need. Eventually, these practices will become part of the culture of the firm, but they should never be allowed to fade into the background where the left brain lurks.¹⁴

Business Strategy

Over time, businesses must offer goods and services explicitly designed to support the right hemisphere's

caring twin, balanced against what is now produced largely for the left hemisphere's self-interested twin. The correct balance point between the two twins will appear when the global system regains its ability to accommodate the human species.

Growth for growth's sake can no longer hide in the cloth of sustainability. The mantra "What gets measured gets managed" must give way to calls for qualitative, systemic, normative indicators. The quality, not the quantity, of life matters. The proper use of sustainability is such a quality — the ability of a living system to survive from day to day, from year to year, or, for the planet, from epoch to epoch. Humans, with their enhanced consciousness and linguistic capabilities, can strive for the more explicit quality of flourishing, which offers a normative target for guiding individuals and for designing institutions and their activities.

Conclusion

There are many obvious challenges ahead in creating the necessary transformation, but perhaps the most difficult is the need for patience and persistence. It will take a long time for changes in behavior to show up at the firm level and much longer for those changes to transform the planet's metabolism. It took a generation or more for Toyota to become a right-brain company, but look how its evolution transformed the way cars and other things are made. And that was nothing compared to what has to be done, starting right now.

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