

Building Intelligence: A Living Systems View

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Many researchers have studied and published their findings regarding the Lima, Ohio Procter & Gamble soap business. What virtually all writers failed to grasp, however, is the reason that it was, and continues to be, so successful. The primary training and development provided for all employees was aimed at building three core forms of intelligence, which go beyond the acquisition of skills and knowledge. Further, the work systems design was built around a belief that continuous business growth occurs by increasing the intellectual capacity of the organization. It is the business result from this belief that caused it to be the most studied business in the history of business and organizational development research. The focus on intelligence was based on the premise that the quality of thinking of the members of the organization would be the prime determiner of business and organizational success and the one capability on which the business could depend in all markets and conditions.

The model for development of intelligence emerges from "living systems theory" and is based on how intelligence functions, universally, in all living systems. In addition to P&G Lima, other organizations that have followed this path have found long-term payoffs in

business growth earnings as well the experience of joy and fulfillment from this meaningful approach to work. This article is a brief introduction to this living systems model of intelligence and its development. The timing seems right, because after thirty-five years of using this powerful approach to building intelligence, it seems to be the “hot new trend” in business.

Brain Work Framework: A Triad of Intelligences

It is possible to understand the three core intelligence by referencing to work developed on how our brain is formed and how it works. Paul MacLean, of the National Institute of Mental Health, discovered over two decades ago that the brain was composed of three distinct but related parts and that each played a role in our way of learning, being, and doing. The three brains are structured vertically, stacked and wrapping one around another, with each taking on a particular role. Though distinct in function, they operate as an integrated whole.

At the base of the brain is the *brain stem*, which is sometimes called the *reptilian brain* because reptiles have only a brain stem. The brain stem functions in humans in the same way as reptiles serving many of the same purposes, although in humans it can be augmented and directed into higher purposes. The reptilian brain uses a form of intelligence which is directed to the physical world. The next level, the *midbrain* or

limbic brain, is shared in function and purpose with other mammals and has its own form of intelligence, which is applied primarily to the work of understanding and relating to other living beings. We humans also have a distinctly human part of our brain, *the neocortex*, sometimes called the *thinking brain*. The neocortex contains our capacity to think into the future and to consider the workings and needs of the larger systems of which we are parts—family, community, ecosystem, etc. All three of these brains are at work most of the time, but primarily outside of our control and awareness, and therefore not to their full potential. In order to have an effective and constantly innovative business, it is critical to develop the capacity and effectiveness of these intelligences in everyone, with the appropriate brain bringing the appropriate intelligence into each situation. This requires the distinctive development of the uniquely human brain to be able to give appropriate organization and direction to the limbic brain and brain stem so their *physical world* and *relationship world* intelligences are appropriately applied and the greatest potential is realized from our integrated intelligence.

Brain Stem or Reptilian Brain: Our Physical World Intelligence

As its colorful name implies, we need this brain to be able to read and interpret our physical environment in order to ensure our safety and perform physical work productively. The functional intelligence of this brain is extensively used, but incompletely developed, in most business and social cultures. This brain warehouses our

learning and maps it onto automatic-pilot neurons, so that we can function without having to think through every move we make. The brain stem thrives on repetition and recurring patterns. It is the source of habits—the good and the bad. The territorial nature of this brain often leads us to experience the world in duality, as does the crocodile. In business and organizational settings this accounts for the tendency to rely upon “standards and procedures” as a means of working, and may explain why some managers believe that getting teams to compete with each other will improve business performance. We will hint at the limitation of each of these approaches.

As Joseph Chilton Pearce points out in *Evolution's End*, if we were limited to the intelligence of the reptilian brain without the other two intelligences, we would operate in a very primitive fashion, behaving as predators without emotion or reason. We would interpret the world in terms of aversion-attraction and see everyone as friend or foe. However, when the reptilian brain is integrated with the other two brains, we have access to extended intelligences. For example, if the reptilian brain is developed beyond its primitive function, it can offer the ability to have intelligence in regard to the “quality “ of our production and actions, and our collective safety in the physical environment. When this intelligence is developed and then guided by the higher intelligences, it leads to operations and organizations whose products are free of defects and enviable safety performance.

There are limitations however, if the reptilian brains operates independent of the upper brains. It can follow the quality or safety standard and procedure to the letter, but as variations, in the context of changing events, occur the reptile can exercise judgment in regard to an appropriate course of action only to a very limited degree. This is why overtraining of the reptilian brain, which is the effect of many safety and quality training programs, usually results in improvements for some period of time, (frequently 18-24 months) but eventually loses. A different intelligence, that of the neocortex, is needed to sustain continuous improvement, especially the improvements designed and led by the people who do the work rather than by the managers. Businesses such as P&G Lima achieve this nature of on-going improvement by developing the full intelligence of each person in the organization.

Limbic or Mammalian Brain: Our Emotional and Relational Intelligence

Daniel Goleman, of Rutgers Graduate School of Applied and Professional Psychology, has recently popularized this form of intelligence and given us an extended view of emotional intelligence and its role in a business environment. The intelligence that is added here is of a nature that makes us more adaptable, resilient, and richer in feelings. The limbic brain can give direction to the reptilian brain and from its emotional processing, add greater aesthetics and increased desire for pleasure. But it also adds

anxiety over our social standing and memories from past experiences— hence the agony and the ecstasy. Most important, it contains our built-in intuitive intelligence that can take into account the well-being of ourselves, our offspring, our colleagues, and our species. The limbic brain’s intelligence maintains relationships between systems, such as our immune system and our emotional bonds. It also serves as the switching engineer for the brain stem and the neocortex, directing the attention of any one brain to the needs of the other. So if we are about to give a performance review to a subordinate, a well-developed emotional/relational brain can make us aware of the need to think clearly about what the person needs and remind us to avoid being overly negative with this person. In contrast, undeveloped emotional intelligence can cause us to have imaginary problems and defenses and come under the command of the reptilian brain and its more limited capacities. When the reptilian brain co-opts the emotional brain to its own purposes, we see fear used as a tactic in the work situation to command conformity. This “brain-napping” can also lead to being overly focused on competitive assessments as a source of business decisions or abdicating of our role in social responsibility.

The Neocortex or Human Brain: Our Expressive and Global Intelligence

The highly popular ideas of *right and left brains* find their home in the neocortex, each with their own work to do, and yet most effective when working in unison. Overall this upper brain, which is five times larger than the other two brains combined, provides us

with a “knowledge developer”, with our creative and critical thinking processes and, if consciously developed, our empathy, compassion, and altruistic capacities. It has the ability to “futurize” and direct the other two brains in higher order tasks and purposes that can create a better future for ourselves and other living systems. As a result we can override the purely stimulus-response mechanism in our reptilian brain and evaluate the validity and appropriateness of our emotional responses. We can put these other two brains to work in the service of higher purposes conceived of by the uppermost brain.

If however, the availability of higher work—that is, work requiring the creative/global intelligence, is not forthcoming, then the lower two brains frequently co-opt the neocortex to do their work, and do not call upon its intelligence. For example, if a worker is not required to use their critical thinking intelligence on the job, they may fall into complaining about work (limited midbrain use) and cause unintentional but expensive errors or off-quality products (limited lower brain use). The neocortex will be called upon to develop the justifications and rationale sought by the lower two brains, which requires very little effort, leaving its reflective capacity to see the whole of the situation and its creative power to invent, largely untapped.

With development of the triune brain network, the base intelligence available through each brain takes on a profoundly different character and our highest brain, the neocortex, can

act upon the patterns of the two lower brain systems to change them to varying extents, thus leading to new patterns of interpreting the world and new behaviors. It is the antidote to the old idea that “people resist change”. Only the lower brain, the reptile in us, resists change. We can develop and fine tune our channels of intelligence to a greater extent and have more control over our intelligence and our mental energy. From this position we can then apply our higher brains to emergencies, or use the lower brains in the service of creative thought or innovation. Without this development, the brains tend to be somewhat dysfunctional in their use as the upper brains are put in the service of the lower brain. This basically puts its higher functions on idle for long periods of time, since it takes little of the neocortex’s energy and neural network to work on these lower tasks—a huge waste of human intelligence. Most work and measurement systems, training, and interactions tend to tap the lower possibilities of these intelligences by creating programs and procedures that encourages repetitive and automatic behavior patterns in the way people work. Good training for a reptile, not for a human.

Designing work to fully develop and utilize intelligence:

When business systems are based on the premise that intelligence is the core factor in overall success, all organizing structures are designed based on this premise. Some examples are offered here to show how several businesses, including P&G Lima, have

fostered the development of a triune intelligence and reaped the financial benefit as well as moral and social returns.

Building Intelligence: Some processes that increase intellectual capacity

Breaking routines: Avoid doing the same things twice in exactly the same way. The reptilian brain cannot guide this process but requires the neocortex, the upper brain, to interpret meaning and utility and invent applications for the new ideas. It increases the neural networks and makes the mind flexible.

Creating External Focus: Connect people's minds to the external environment as their source of motives. Where internal measures are the source of information, we rarely foster the middle brain to care, and most often, the reptile in us looks for the "threat" or the "battle." Through connecting to the external environment as the source of motives, every employee takes stewardship for and is measured by a customer's or market's effectiveness and the success of the whole. Although our experience is that they are insufficient by themselves, this is why profit sharing systems are more effective than incentives for individual employees or teams. The human neocortex works on how the whole can succeed, whereas the reptile operates by the dictum of "every man for himself". Working primarily on improving the customer's performance, and measuring all performance by that parameter, puts all brains to work in an integrated way. Each

employee can be connected to and responsible for a particular customer and that customer's business effectiveness—a global brain task. This immediately calls the neocortex into service and requires the emotional brain to use its relational intelligence to think about what will make the customer more successful. This is especially true if the measures of success are the customer's. While most business people think this creates accountability for things over which people cannot have control, and it is better to keep them more closely focused, this is really only because the intelligence to engage with customer improvements is not developed.

Promoting Intrinsic Rewards: Foregoing feedback instruments and appraisals directed by others is foundational to having people reflect on their own behavior and become self-accountable for the effects they create in the world. Motivation is self directed and more demanding when personal reflection is the means of discipline. This gives the middle brain room to build healthy working relationships and challenges the upper brain to see the effects of personal actions on the future and on all stakeholders.

Working with Mental Structures and Frameworks, those natural to a complete thinking process, to cause the mind to build relationships among ideas and possibilities. When you walk through an operation or office of a company building intelligence as well as

skills, you see walls covered, not with lists and numbers, but with ideas as symbols and structures that show the relationships and impacts of ideas on one another. Seeing the system at work inspires, and the frameworks generate increased completeness in thinking and break down conflicts among egos.

Working in a dialogue mode: when people have to exchange and develop thinking together, it causes the brain to build new neural networks and to mylenate the pathways that connect them, thereby building more possible connections and associations. This is true as long as internally competitive processes are not introduced. Dialogue also fosters the desire to support others and stimulates the value for support in return. Dialogue was a mode developed in ancient Greece by Socrates, and is frequently referred to as Socratic Method. Socrates held that a lecture or persuasive way of attempting to transfer knowledge was really only a transfer of opinions. He believed that knowledge developed through internal processing was needed for one to become a thinking person and to have the chance of achieving excellence. He argued repeatedly that unless one could develop one's own *well developed reasoning* regarding the meaning and working of ideas and virtues, defend one's idea into a debate, and test for understanding in one's life— it was not possible to really acquire virtues and therefore not possible to become a person who reflected excellence. Only through deep understanding, which is an inner process, could one gain such knowledge and understanding. He believed that only through the nature of

examination it takes to develop critical thinking skills and to face one's own personal limitations in trying to develop critical thinking, could one develop the inner experience of virtue and true intelligence. As long as one holds an opinion that has merely been adopted from others (whether parent, teacher or leader), it is not possible to actually understand thinking nor is it possible to actually be intelligent.

Leading from principles: Work primarily from principles as a leadership tool rather than from “standards and procedures”. Principles have been popularized by Stephen Covey, but few organizations have adopted them as a way of working. P&G Lima managed and operated by principles from the early 60's and found that they require judgment processes that only the upper brain can make, so the full capacity of the human brain is called upon. The principles, if well developed by those who will use them most, also have embedded in them the values of “the whole” and an understanding of the effects they seek to realize. If wisely considered and constructed, they also beget continuous improvement as a way of living by them. So we move from rules such as “Get it right the first time” to a principle such as, “Seek to continuously improve the product and the process, for ourselves and our customer's benefit, with each thought we have and action we take”. In the first guideline, we are “right or wrong” each time, the work of the reptilian brain. In the later principle, we must always build our capacity to perform

better for the benefit of a grander and greater whole. This inspires the upper brain to “be all it can be”, to borrow a phrase, and to do it better with each succeeding day.

Summary:

As may be apparent at this point, many researchers and authors have taken pieces of these intelligences and published them in the form of programs organizations are advised to adopt. When presented as elements rather than as a whole, the programs and approaches themselves are fragmented, and organizations become fragmented in trying to implement them. This is the case especially when programs are presented one after another or when more than one is implemented at a time, but independent of one another. The intent, to keep re-energizing the business, tends to produce the opposite. P&G Lima and several other companies have worked from the living systems technology that integrates these in a meaningful and useful way and causes a “systems view” of work and business to be held in mind by all the employees of a business, from top to bottom.

The most important thing about working from a “living systems” technology and not multiple separate programs, is that an organization can then invent its own new programs, as do P&G Lima and other businesses who use this approach. All the popular programs of the last two decades—principles, process thinking, quality, and many others we can list, were developed from within their own work force, and these businesses are ahead and

still inventing programs you will hear about in coming years. Waiting for the business “gurus” to do our thinking leaves us as copycats. Business success is dependent on the quality of thinking and intelligence of its organizational members, and they need a technology for making this a part of life and a way of doing business. The more we understand the different intelligences we have as human beings and the different ways we can think about a situation intelligently, the more likely we are to develop higher quality thinking about anything we take on and be able to continue to do so as markets and customers change. Our intelligence can be continuously developed, but this is dependent upon our understanding of the forms it can take and of processes for developing it continuously. Once we understand these forms of intelligence and their appropriate application to different situations, we can better develop our intelligence as a business, and our families and communities, and make rewarding applications for the benefit of all.