

## ***The Right Tools for the Job***

Language represents the most distinctive--and formative--characteristic of our species. All creatures use languages in ways characteristic of their user-groups, from single-cell organisms to birds and people. In our case, however, language is our *tool of tools*, making the development of culture and technology possible, shaping not just the world, but the brain that processes it. We use it to discuss it, interpret the world, process information, connect with others, work together, and get anything done.

A lifetime working with language has shown me that words can't be pinned down. They are slippery, elusive, flexible, more shape-shifting than balloons. Press a word one way, it bulges out another. You can tie them together in knots and twist them into all kinds of shapes to represent animals, ideas, feelings, things, or even models of the universe. Yet change the tone slightly, how they're delivered, and meaning can reverse, turning "bad" to "good" and "totally crazy" to "spot on."

Amazingly, language is both *vessel* and *vehicle*, a container of meaning and a means of developing it; a method of transport and transmission, as well as of exploration and discovery, clarification and development, fine-tuning and transformation (a fancy name for being changed by *how* we've made a journey). A lullaby conveys one kind of meaning, a legal contract another, with all the other ways we use language, including interpretive perception, understanding the world and working together.

Understanding is itself a slippery concept, which language helps shed light on without diminishing any mystery. The more we understand language &/or understanding, the more we face the elusive relationship of witness, word & world. Where is witness without world or world without witness? Where these two join, the word emerges as a function of the relationship, mediating between the witness' attention and relevant differences in the world—food & danger, safety & threat, orientation & confusion.

The infant needs no word to find the breast, to love, burp, excrete. Its functions are provided from within (the directions nature has coded in its language of the genes) & without—caretakers who use words to nurture, to pass on functional awareness, to guide attention. If love is prior to the word, its first expression affirms the connection, more music than content, more feeling than function.

In a flock, language of connection and orientation may amount to the same thing, providing the sense of where each part is in relation to the greater whole. The same may be said for the language of the infant in contact with its mother, or wanting to be. The communication of connectedness is itself functional in countless ways, from getting fed to navigating through a complex and dangerous world.

Language enhances functionality in many ways. Besides providing the sense of connection & orientation, it fosters the ability to *do*, whether this involves working with others directly or in looser networks. Language even fosters the ability to do things alone, clarifying process, defining steps in the mind, etc. Besides transmitting

information, it can also help sharpen focus, enrich perception, coordinate attention, organize action & affect mood. Whether for single cells, birds in a flock or humans, language frames orientation, while shaping how we relate, feel, choose, and plan.

By developing language that includes verbal representation transcending the moment of generation, humans have vastly expanded its functional reach, along with a potential to mislead, whether from fuzziness, ignorance or deliberate distortion. While making communication possible, in other words, human language also makes miscommunication possible, turning the capacity to represent bits of reality into the ability to misrepresent, widening the gap between content (substance) & its packaging (labeling).

Misrepresentation can be deliberate, driven by ulterior motives, and/or a reflection of user ignorance, not yet seeing things clearly enough to represent accurately. We modify how we interpret the credibility of information received, therefore, according to our sense of the deliverer's motives and level of understanding.

We presumably have different standards for those trying to sell us something (even themselves) and for experts with no axe to grind. "Nine out of ten actors who play doctors on TV recommend...." We may equally presume that the ability to discriminate between these varies, so put special filters on advertising to children.

For credibility and trustworthiness, the sciences depend on commitments to

1. report truthfully (the whole truth, and nothing but), without intentional slant, spin or distortion, and
2. refine representations on the basis of progressively more detailed data and comprehensive understanding.

We presume this dual foundation—honest reporting & continual refinement—conveys benefits through time, making science a higher-order tool with many applications.

"Knowledge is power," said the ancients, on the assumption both provided advantage. The realization that a little knowledge-power could also be dangerous had to follow shortly. The Icarus myth—or the 70<sup>th</sup> anniversary of the nuclear age—may remind us that a *lot* of knowledge-power might be all the more so.

It's in the nature of tools to amplify the user's power, reach & ability to have effects. The more power a tool has, then, the more knowledge is required to guide its use. Language is our primary tool for acquiring, storing & passing on knowledge, including what we've learned about tool-making. It's our tool of tools, a Swiss Army knife that makes smart-phones, tells time, & takes itself apart trying to figure out how it works, where it came from, where it's going....

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