

Chapter 14

Communication and Language in the Age of Digital Transformation

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14.1 The Philosophy

Technology and futurism usually go hand-in-hand. In consumer electronics the need to innovate is more necessary than ever. Manufactures now simply cannot be certain that a given platform or device will dominate the industry for longer than a few years before something else comes round [1]. While futurism includes not simply the future of gadgets, the field found itself pushing away some of the perceived “softer” elements of foresight: social change, family structures, cultural impacts—in favour of mathematical modelling and technology.

This chapter will explore the simple yet difficult phenomenon of communication. How do we communicate in the age of rapid technological shift? And with the increase in labour automation rates how do we communicate to machines more effectively?

Let’s start with looking at the semantic underlining of the concept of information—how we perceive it, store it and communicate it to others.

14.2 Information

Abstractly, information can be thought of as the resolution of uncertainty. In the case of communication of information over a noisy channel, this abstract concept was made concrete in 1948 by Claude Shannon in *A Mathematical Theory of Communication* [2], in which “information” is thought of as a set of possible

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messages, where the goal is to send these messages over a noisy channel, and then to have the receiver reconstruct the message with low probability of error, in spite of the channel noise. Its impact has been crucial to the success of the Voyager missions to deep space, the invention of the compact disc, the feasibility of mobile phones, the development of the Internet, the study of linguistics and of human perception, the understanding of black holes, and numerous other fields.

14.3 The Unspeakable Level

Language is one of the most efficient forms of person to person communication. However, it can be argued that we live our lives on unspeakable level and use the language to help us process what's happening around us, identify it, reflect on that and share the experience with others.

Any map or language to be of maximum usefulness if in structure it was similar to the structure of the empirical world. Likewise from the point of view of the theory of sanity [3] any system or language should in structure be similar to the structure of our nervous system. Language is a fundamental *psychophysiological* function of a man, scientific investigation of a man in all his activities.

Empirical evidence suggests that different man-made verbal systems can stimulate or hamper the functioning of human nervous system. The language of the new standard must explore the relationship between the actual objects outside our skin and our personal feelings inside— so the only link between the objective and the verbal is structural. Structure can be considered as a complex of relations, and ultimately as multi-dimensional order. Meaning of the word depends on meaning of the words used to describe it.

The world is made of language, and sometimes this can be unreliable. The numeral 2 only means something because it is not 1 or 3. House only exists because it isn't a boat or a street. I am only me because I am not someone else.

The whole system of existence is a closed system floating on nothing, like a locked hovercraft [4].

The duality in the neurorepresentation and cognitive organisation of language holds key interest to scientists [5] Our lives are lived on objective, un-speakable levels, not on verbal levels. In order to necessitate a fundamental revision of the structure of language, a semantic factor the language of four-dimensional structure needs to be introduced. Humans are different from other species because of the *time-binding factor* (which means that the new generation can roughly start off where previous left off).

Alfred Korzybski outlines our need to create a language embracing all the functions—verbal communication, mathematics, science, mental health. Language represents inherent psychophysiological function of human organism that has been neglected for so long. However building of such system is beyond the power of a single man to complete and needs to be addressed by a wider community.

We are ruled even more, and even less consciously, by the inventors of the wheel, the plow, the alphabet, even the Roman roads [6].

Wilson [6] argues that nervous adjustment of invoking generations that are being forced to develop under unnatural for man semantic conditions imposed on them produces leaders with old animalistic limitations. He describes it as a feature of *bio-survival circuit* where we all have to work hard and hunt for our *food tickets* with the only exception that now it mostly happens virtually. This is also the reason behind our neurotic behaviour when we don't get a tweet or an email back.

Generally we do not use our nervous system properly and have not emerged from a very primitive semantic stage of development in spite of our technical achievements [3].

The ultimate goal is not only to sketch a scientific program for the future (like Aristotle did) but to build a system which at least in structure is similar to the structure of the known facts from all branches of knowledge. Many statements of scientists still have to be translated into a special language in which structural issues are made quite possible, divulging factors in semantic reactions.

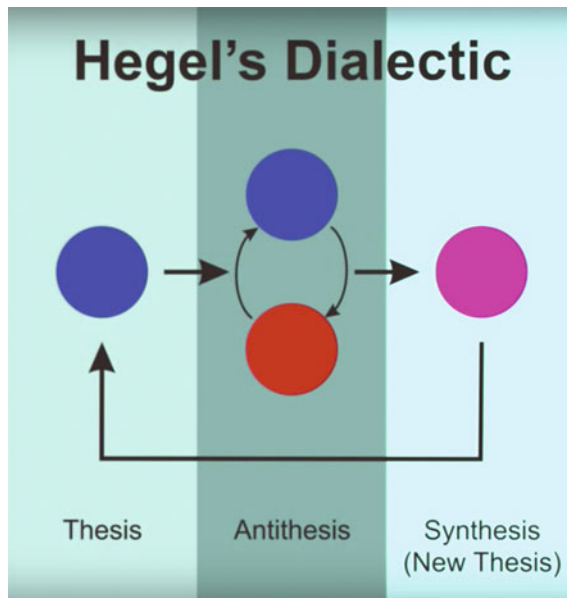
All desirable human characteristics (including high 'mentality') have a definite psychophysiological mechanism, easily understood and trained kind of like mastering car driving or spelling. Can it be the next potential human language?

Some problems arise from there. The first one is scientific as it requires a revision of all systems. The second is a practical one given the time and effort required to master the system. Currently there are already some methodologies that overlook this. Neurolinguistic programming, for instance, is a method of influencing brain behaviour through the use of language and other types of communication to enable a person to "recode" the way the brain responds to stimuli and manifest new and better behaviours.

14.4 Logic of Paradox

In the early 80s the urgent need to develop the extremely complex mathematical structure of the Unified Relativity and Quantum Theory (URQT) and to solve its equations resulted in the idea of an artificial (constructed, engineered) universal language. This language was supposed to be a theoretical language like mathematics, a theory of the field described by the language, but in addition it was meant to be a real spoken language to make learning it and using it really easy even from early childhood, ideally from birth [7].

It was decided not to use formal predicate logic as a basis for the new language like it was done for well known constructed language loglan or its modified version lojban [8]. Instead, the most effective tool of modern theoretical physics was used for the foundation of this new language: symmetry group theory. Symmetry was taken in its fundamental form as the symmetry of oppositions.



The symmetry of oppositions is known in traditional philosophy under the name of *dialectics* which was popularised by Hegel. Dialectics can be described as the practice of arriving at the truth by the exchange of logical arguments or, in theory “means of extracting the truth” [9]. Dialectics is widely used in natural human languages and is also relatively easy to comprehend. The only problem with the logic of oppositions is that when followed to the very end at each logical point it inevitably leads to paradoxes. In fact traditional dialectics as a way of thinking may be called the “logic of the paradox” because it seemingly contains paradoxes at any given level.

It was quickly realised that paradoxes did not simply represent some kind of bizarre flaw in the theory, but that they were actually powerful “points of singularity” giving rise to new ideas and innovative solutions represented by the means of a new language. Later it was understood that paradoxes served also as fundamental generative rules for the fractal structure of the constructed language and all of its forms.

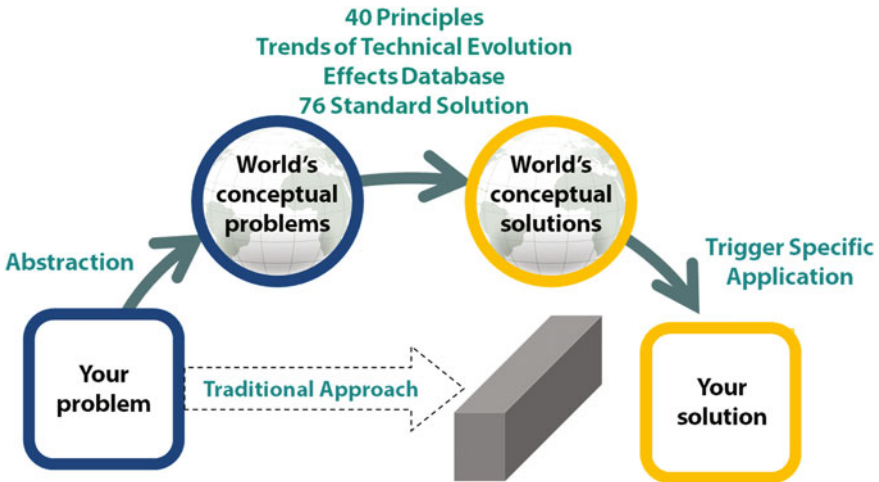
After the fundamentals of the new language were formulated, together, the group of young physicists developed the body of the language. In homage to its dialectic roots, the new language was named Dial [8]. This language wasn’t popularised and is no longer in use however there are studies that claim there is an evidence showing the change in brain's neuroplasticity throughout the tests, especially with the younger segment of people. Very little is known about the history of the language and its destiny remains unknown.

14.5 Artificial Languages

We as humanity developed many languages to communicate our ideas to the machine. There’s C++, Ruby, Javascript to name a few. Essentially computers talk to each other just like we do. In the last decade a lot of research has been done into the study of Human Computer Interfaces—how to communicate to machines more efficiently. What’s interesting is that on the front end it still has a linguistic input channel but is there a way to exchange information a little more efficiently than in English, Spanish or Chinese? And how do we make them solve the problems more efficiently?

For instance, TRIZ (theory of the resolution of invention-related tasks) [10] developed by the inventor and science-fiction author Genrich Altshuller points to the need to produce a theory which defines generalisable patterns in the nature of inventive solutions and the distinguishing characteristics of the problems that these inventions have overcome.

The graph below summarises its principles.



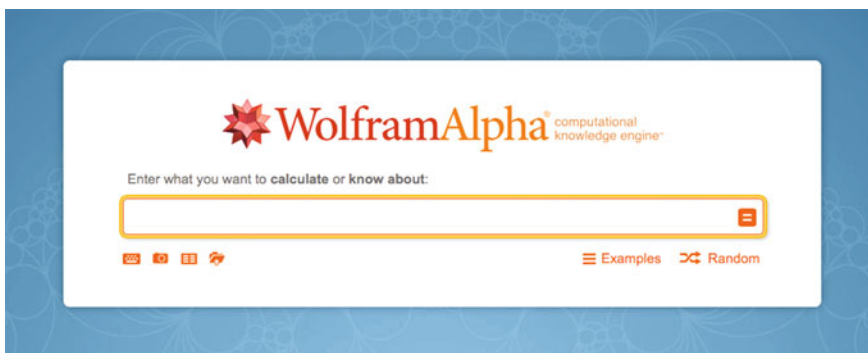
Problem requires an inventive solution if there is an unresolved contradiction in the sense that improving one parameter impacts negatively on another. He later called these “technical contradictions”. The full list of contradictions can be viewed in a TRIZ Matrix [11].

		<div style="display: flex; justify-content: space-between;"> <div style="text-align: right;">Worsening Feature →</div> <div style="text-align: left;">← Improving Feature</div> </div>							
		Weight of moving object	Weight of stationary object	Length of moving object	Length of stationary object	Area of moving object	Area of stationary object	Volume of moving object	Volume of stationary object
		1	2	3	4	5	6	7	8
1	Weight of moving object	+	-	15, 8, 29, 34	-	29, 17, 38, 34	-	29, 2, 40, 28	-
2	Weight of stationary object	-	+	-	10, 1, 29, 35	-	35, 30, 13, 2	-	5, 35, 14, 2
3	Length of moving object	8, 15, 29, 34	-	+	-	15, 17, 4	-	7, 17, 4, 35	-
4	Length of stationary object	-	35, 28, 40, 29	-	+	-	17, 7, 10, 40	-	35, 8, 2, 14
5	Area of moving object	2, 17, 29, 4	-	14, 15, 18, 4	-	+	-	7, 14, 17, 4	-
6	Area of stationary object	-	30, 2, 14, 18	-	26, 7, 9, 39	-	+	-	-

Just like the physical attributes of object are subjects to the certain laws of co-relations, the physical and metaphysical has also been observed to display similar patterns. For instance, the subject named *synergetics* explores small actions affecting big systems. The term was coined by Buckminster Fuller who has attempted to define its scope in his two volume work *Synergetics* [12]. It remains an iconoclastic subject ignored by most traditional curricula and academic departments because of its complex nature—it is in fact a so-called aggregator of variables rather than the study itself. All of the exact sciences of physics and chemistry have provided for the accounting of the physical behaviours of matter and energy only through separate, unique languages that require awkward translation through the function of the abstract interpreters known as the *constants*. But synergetics embraces the comprehensive family of behavioral relationships within one language capable of reconciling all the experimentally disclosed values including Einstein’s energy equation, Euler’s topology of points, areas, and lines, Kepler’s third law, Newton’s theory of gravity, Thermodynamic laws as well as various studies of philosophical nature.

Based on these concepts what may the search engine of the future be like? People might be using ‘search’ to discover structural relations. Already there are alternative search engines like Wolfram|Alpha [13] that question the way we look for answers on the web. They might understand and interpret what’s going on

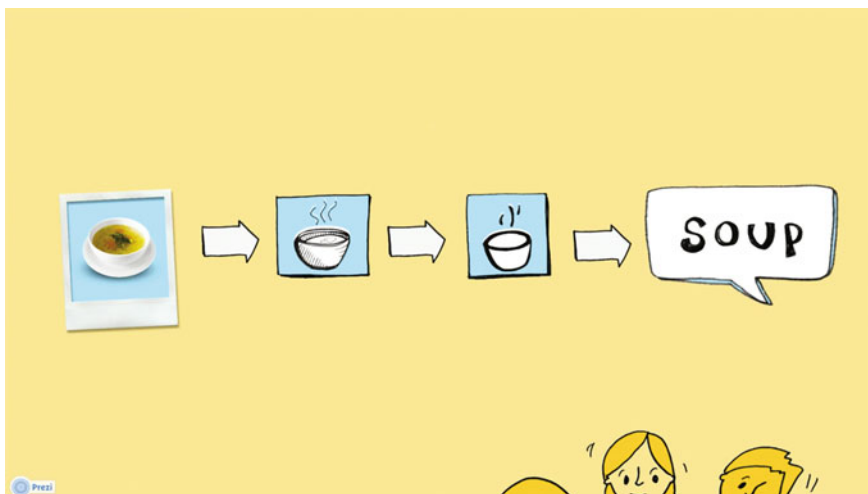
around them fully and have healthy semantic relations. Mankind might become a truly a time-binding nation: we will master ways to pass information to our heirs instantly so they could build up on our knowledge, however have a full free will set in place to discover their own doctrines.



Quantum computers will be much smarter than us. They will be ambiguous and explorative and both will be capable of probable and possible behaviour [14].

When we are born at what point do we start learning about the world and identifying ourselves and everyone around? Are we conscious at that point or does it come with exposure to culture such as language, sciences, humanities?

An interesting case study was presented by FreeSpeech technologies team who are currently working with autistic children to help them communicate more efficiently [15]. Narayanan turns our attention the word ‘soup’ being represented by an abstract sketch as well as more arbitrary word that stands for ‘soup’. Children with autism find it very hard to grasp the contextual relations between the word and the image it represents so simplifications were made to address this gap.



Essentially, FreeSpeech technology represents sentences without language which means you can start constructing a concept from anywhere in the sentence. Also, if the user isn't an English speaker their map would actually hold true in any language. So long as the questions are standardised, the map is actually independent of language.

It can be argued that in the future the methodology behind FreeSpeech could help create a “universal language translator“ (like the one in Star Trek) to translate any unknown languages.

14.6 The Internet of the Brain

Our brain is constantly proving or disproving the facts. The reality unfolds in front of us as it's being observed. Now let's take a look at the information on the internet—how difficult it really is to fake a person, an idea? Technology might be time proof but its not idiot-proof or troll-proof and the mediums of information storage are erasable and fragile. What sort of content are we expected to get from people? *On the Internet we have power of the situations where we would otherwise feel powerless. The tech-utopians present it as the new kind of democracy but it isn't. It locks people off in the world they've started with and prevents them for finding anything different* [16].

In the age of digital deception how relevant the phrase “nothing is real until it is observed” really is? The programmes like Catfish explore the dark side of identity manipulation. Where to draw a line between little lies on ones CV and pretending to be someone completely different on the internet?

If this theory would prove to be correct it would follow that we can exist digitally by running ourselves as simulations. And this is what's known as computational hypothesis of the brain [17].

Technology becoming more and connected with our bodies. So what has changed? Digital immortality (or “virtual immortality”) is the hypothetical concept of storing (or transferring) a person's personality in more durable media, i.e., a computer, and allowing it to communicate with people in the future. The result might look like an avatar behaving, reacting, and thinking like a person on the basis of that person's digital archive. After the death of the individual, this avatar could remain static or continue to learn and develop autonomously. A considerable portion of transhumanists and singularitarians place great hope into the belief that they may become immortal by the year 2045, by creating one or many non-biological functional copies of their brains, thereby leaving their “biological shell”. These copies may then “live eternally” in a version of digital “heaven” or paradise.

Already scientists suggest that by linking the brains together, they could create Brainets—a system of brains attached together to make an “organic computer” [18]. The language as a mean for communication may be up for the review in that case as well as our psyche mechanisms. As the amount of our daily information intake

increases we can see an increase in mental health issues which will need to be addressed in the near-distant future.

By the end of the day what is the purpose of technology? Is it there to highlight our pre-enlightenment era habits, are we using Facebook to claim our Rewards of the Tribe [19] due to our need to seek social validation? Are we there to ‘burn the witches’ and publicly shame [16] the people we don’t necessary agree with? Are the app icons with animal icons acting as a symbolism for digital neo-paganism coming back to show us to worship the new gods of the Internet era?

In the same way computer software can run on a different hardware maybe the software of the mind can run on other platforms. Are we connected so much that at times it feels like we want to disconnect for a while? What is awareness? Does to know mean to be aware? And how do we accept or reject information that later forms our knowledge base? All these questions remain unanswered.

Language is an instrument of thought. It must concisely and correctly display and simulate reality. Daniel Webster said this: *“If all of my possessions were taken from me with one exception, I would choose to keep the power of communication, for with it, I would regain all the rest.”*

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