

ABSTRACT

TITLE. "Logical Anthropology, Transduction, and Big Data Analytics."

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INSTITUTION. IEA-USP.

EVENT. EBICC, Campinas, 2019.

DATE. 09.08.2019.

LENGTH. 716 words.

TEXT. Three stories are told from the author's experience of everyday life in China. These illustrate principles of 'polyadic pragmatism', which we define as pragmatic adjustment of action to context in the face of multiple functionalities, goals, and circumstances. Some of these principles are 'forking', the 'shuffle', and the 'multiplex'. Forking is a substitution principle which focuses on the functionality of objects in context rather than on their conventional identities and uses. This determines that substitution is legitimate when functionality is equivalent or sufficiently overlapping. The shuffle is a co-existence principle which specifies that when two or more games operate within one situation, it may be holistically pragmatic to avoid interference between them. Expressions of this are to be found in: "I do my thing, you do your thing, nobody talk, nobody worry", and in "See no evil, hear no evil, speak no evil". The multiplex is a poly-context in which one action may have multiple results (in the various sub-contexts), and hence its holistic utility is an average of the resulting sub-utilities. Estimation of the action's holistic utility therefore depends on the scope of sub-contexts which is considered. Thus in decision making, our calculation of holistic utility may be influenced by being 'alerted to an issue' which widens this scope. Given limitation of the resource of attention in a cognitive system, it may be that our scope is narrower than is optimal, and hence that being alerted to an issue by another agent can improve our pragmatic decision making. The interest here for epistemology is that an advantage is created by the direction of attention rather than by the supply of propositions.

The examples given here concern napkins, men's shorts, and the purchase of tea, and additional examples can be provided (time permitting) in the field of cross-cultural skill and understanding, e.g. involving taxis and a car museum. These illustrate 'opduction': the estimate of the probable consequences of an action in context, and the resulting adjustment of that action to optimal holistic effect. This is the second half of the author's concept of 'transduction' (Manuscrito, 38, 3, 2015). Transduction = deduction + opduction. Opduction is distinct from

abduction (C.S. Peirce) which concerns the probable causes or explanations of an event. Both production and abduction may be multiplex (poly-contextual), but our main concern here is with production. The examples involving taxis and a car museum exhibit both production and abduction, working collaboratively, since it is necessary first to abduce the mental state of another party which then acts as the context to further production.

The author's methodology has been anthropological, and the work was conducted in China, though no suggestion is made here that the structures identified are peculiar to any country or culture. The adjustment of action to context is a global issue, with special relevance to life in the 21st Century, since, as is observed in business decision making, circumstances are increasingly volatile. Agility is needed in response to this volatility, and the author's analysis of agility is transduction as an instrument of polyadic pragmatism.

Regarding machine support for agility, there exists an operational link between the mechanics of transduction and the architecture of IBM's Watson system for big data analytics. Watson uses a "candidate-generation-selection-pipeline" in which a set of candidate answers is first generated and then narrowed down through "scoring-and-ranking". This mirrors the sequence in transduction in which, after determining a provisional or default action, it is necessary to generate a set of candidate 'frames' which modulate the enactment of the default action, and to select the frame which creates the highest utility in the present context or situation. This productive process is probabilistic and hypothetical, as is the scoring-and-ranking in Watson. This suggests a strategic use of Watson and similar systems in which query formation and query evolution are designed to elicit a transductive response, thus providing augmented agility as a specific form of augmented intelligence. It also suggests a way of understanding, in logical terms, what such systems are actually doing, which in turn fortifies us in managing their use and misuse. We might say here that "Logic without big data is empty, and big data without logic is blind". And such understanding is crucial to steering "Life in the Cognitive Era" to good waters, and away from rocks, stress, and chaos.

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