

The DARPA Machine Common Sense (MCS) Program: A Phenomenological Diagnosis of its Interpretational Challenges

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1. The DARPA MCS program

The Defense Advanced Project Research Agency (DARPA) Machine Common Sense (MCS) program proposes to fund “innovative research” to “mimic” common sense in machines for “defense and commercial” purposes. Its overarching goal is to enable “Artificial Intelligence (AI) applications to understand new situations, monitor the reasonableness of their actions, communicate more effectively with people, and transfer learning to new domains.” Achieving this objective would produce the critically missing “component” the program asserts is requisite to transforming the technology from its current “narrow” version to an envisaged “general” one that simulates common sense. The MCS initiative contends that although current AI is unable to provide “a widely useful common-sense capability” and “general machine common sense remains elusive,” recent technological developments, particularly in machine learning and its “deep” iterations, as well as advancements in the developmental-psychological “understanding and modeling of the foundations of human cognition” are evoking optimism in the prospect.¹

The MCS program defines common sense as “the basic ability to perceive, understand, and judge things that are shared by (‘common to’) nearly all people and can reasonably be expected of nearly all people without need for debate.”² It borrows the understanding from Wikipedia and supplements it with descriptions that associate common sense with “shared, unstated background knowledge” that “includes a general understanding of how the physical world works (i.e., intuitive physics), a basic understanding of motives and behaviors (i.e., intuitive psychology), and a knowledge of the common facts that an average adult possesses.”³ The MCS program, as explained in its “Broad Agency Announcement” (BAA) (HR00119S0005),⁴ seeks to simulate this understanding

¹ “Broad Agency Announcement: Machine Common Sense (MCS),” HR00119S0005, Defense Advanced Research Project Agency (2018), 5-6.

² *Ibid.*, 5.

³ *Ibid.*, 5.

⁴ *Ibid.*

of common sense in machines. It is conditionally premised on the development-psychological thesis corresponding “the fundamental building blocks of human intelligence and common sense” to “core” cognitive “domains” postulated to develop in children from the ages of zero to 18 months. It judges that the posited developmental “sequence” of these domains, especially those of “objects (intuitive physics), agents (intentional actors), and places (spatial navigation),” affords “an excellent set of target milestones for AI researchers to mimic as a strategy for developing a new foundation for machine common sense.” It recognizes that although “these milestones are particularly useful,” they only represent a “selection” suggested by the literature. The program reports that developmental-psychological research of “childhood cognition” is backed by “years of experimental results” that allows it “to map out the cognitive capacities of children” and “provide empirical and theoretical guidance for building intelligent machines that think and learn like children.”⁵

The MCS program is organized into three technical areas (TAs). They are: “The Foundations of Human Common Sense” (TA₁), “Test Environment for the Foundations of Human Common Sense” (TA₂), and “Broad Common Knowledge” (TA₃). TA₁’s goals are to (a) “develop computational models that mimic the core cognitive capabilities of children, 0-18 months old;” (b) “consolidate, refine, and extend the psychological theories of child cognition needed to guide model development;” and (c) test the “key predications made by the computational models.” It coincides the “core cognitive capabilities of children” to six domains developmental psychology subsumes under its “Theory of Core Knowledge.”⁶ These posited domains are (a) “reasoning about objects and the laws of physics” (“Objects”); (b) “reasoning about agents that act autonomously to pursue goals” (“Agents”); (c) “navigation and spatial reasoning around an environment” (“Places”); (d) “reasoning about quantity and how many things are present” (“Number”); (e) “representation of shapes and their affordances” (“Geometry”); and (f) “reasoning about Theory of Mind and social interactions” (“Social World”). TA₁ prioritizes the simulation of the first three domains: “Objects,” “Agents,” and “Places.”⁷

⁵ Ibid., 7-8.

⁶ Susan Carey and Elizabeth S. Spelke, “Science and Core Knowledge,” *Philosophy of Science* 63, no. 4 (1996); Elizabeth S. Spelke, “Core Knowledge,” *American Psychologist* 55, no. 11 (2000); Susan Carey and Katethine D. Kinzler, “Core Knowledge,” *Developmental Science* 10, no. 1 (2007).

⁷ “Broad Agency Announcement: Machine Common Sense (MCS),” 7-10; David Gunning, *DARPA Machine Common Sense (MCS) Proposers Day - Program Overview*, podcast audio, accessed 15 August 2023, 2018, <https://youtu.be/rSrZMGqkU-M>.

TA2's goal is to provide an "environment" that tests and evaluates "TA1 models against cognitive development milestones as evidenced in developmental psychology experiments with children from 0-18 months old."⁸ TA3's goal is to "learn/extract/construct a common-sense knowledge repository capable of answering natural language and image-based questions about common-sense phenomena." The MCS initiative envisages "a service that learns from reading the Web, like a research librarian," and mimics "the general knowledge of an average adult in 2018," which is the year DARPA launched the program. This "general knowledge" will be evaluated against "Allen Institute for Artificial Intelligence (AI2) Common Sense Benchmarks;" AI2 scales are derived from "crowdsourcing." TA3 will also create "five common-sense question datasets" to test the services it develops. They are (a) "Commonsense Natural Language Inference (NLI)" (CNLI); (b) "Commonsense NLI with Vision" (CNLIV); (c) Abductive NLI" (ANLI); (d) "Physical Interaction Question Answering (QA)" (PIQA); and (e) "Social Interaction QA" (SAQA). CNLI will comprise "multiple choice, natural language based questions about common-sense events derived from captions in the Activity/Net Captions and Large Scale Movie Description Challenge (LSMDC) datasets." CNLIV will comprise "multiple choice, image-based questions about events selected" from the same datasets. ANLI will test capabilities to infer "the most likely hypotheses for a given set of observations." PIQA will comprise "natural language" and "image-based questions" about "everyday objects and actions." SIQA will test services with "questions about human social behavior and the causal effects of everyday events."⁹

An issue the MCS program contends is challenging efforts to "articulate and encode" common sense is the phenomenon's "obscure but pervasive nature."¹⁰ The assertion implies a change in the conventional paradigm. Whereas the success of the "hard sciences" (e.g., physics, mathematics, biology) has been correlated to "soft problems" (quantifiable, differentiable), and the struggle of the so-called "soft sciences" (e.g., psychology, sociology, anthropology) has been correlated to "hard problems" (human phenomena),¹¹ in this instance the hard sciences are obliged to confront a soft-science hard problem: the question of common sense. This article does not proffer computational,

⁸ "Broad Agency Announcement: Machine Common Sense (MCS)," 7, 10-11.

⁹ Ibid., 7, 11-12.

¹⁰ Ibid., 5; Gunning, *DARPA Machine Common Sense (MCS) Proposers Day - Program Overview*; Howard Shrobe, "Machine Common Sense (MCS)," Defense Advanced Research Project Agency, <https://www.darpa.mil/program/machine-common-sense>.

¹¹ Heinz von Foerster, *Understanding Understanding: Essays on Cybernetics and Cognition* (New York: Springer, 2003), 191; Yaneer Bar-Yam, *Dynamics of Complex Systems*, ed. Robert L. Devaney (Reading: Addison-Wesley, 1997), xii.

software, or engineering solutions. Its purpose is diagnostic. It is not prescriptive. It endeavors to clarify phenomenologically the obscurity and pervasiveness the MCS program contends is impeding efforts to articulate and encode common sense. The article (1) reviews the cognitive psychology of common sense and highlights its strengths and weakness assessed against the prospect of machine common sense and phenomenologically; (2) lays out the phenomenology of common sense; and, from those findings, (3) responds to the question of common-sense's obscurity and pervasiveness.

2. The cognitive psychology of common sense

The cognitive psychology of heuristics,¹² as well as its experimental and social psychology, as articulated in the works of Kahneman¹³ and others, including Kahneman and Tversky,¹⁴ Kahneman and Klein,¹⁵ Stanovich and West,¹⁶ Simon,¹⁷ and Haidt,¹⁸ provides an empirically consistent answer to the question of common sense.¹⁹ Common sense, it can be inferred from this literature, notwithstanding its apparent resistance to name the phenomenon specifically likely because of the sundry empirical (and human) questions it implies, is everyday understanding and thinking, where “everyday” denotes “intuitive,” “intuition is understood as nothing more and nothing less than recognition,” and recognition is understood as nothing more and nothing less than association.²⁰ Everyday (intuitive) understanding, as explained by Kahneman, is straight up associative interpreting, and a more or less passive process. Everyday thinking, as he also explains it, is

¹² The term “cognitive psychology” is used here generally.

¹³ Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus and Giroux, 2011).

¹⁴ Daniel Kahneman and Amos Tversky, “Prospect Theory: An Analysis of Decision under Risk,” *Econometrica* 47 (1979); “Choices, Values, and Frames,” *American Psychologist* 39, no. 4 (1984); Amos Tversky and Daniel Kahneman, “Judgment under Uncertainty: Heuristics and Biases,” *Science* 185, no. 4157 (1974).

¹⁵ Daniel Kahneman and Gary Klein, “Conditions for Intuitive Expertise: A Failure to Disagree,” *American Psychologist* 64, no. 6 (2009).

¹⁶ Keith E. Stanovich and Richard F. West, “Individual Differences in Reasoning: Implications for the Rationality Debate?” *Behavioral and Brain Sciences* 23 (2000).

¹⁷ Herbert A. Simon, “What is an ‘Explanation’ of Behavior?” *Psychological Science* 3, no. 3 (1992).

¹⁸ Jonathan Haidt, “The Emotional Dog and Its Rational Tail: A Social Intuitionist Approach to Moral Judgment,” *Psychological Review* 108, no. 4 (2001).

¹⁹ Joaquin Trujillo, “Thinking, Fast and Slow, in the Life-World: A Comparison of D. Kahneman and A. Schutz’s Interpretations of Common Sense,” *Phenomenology, Humanities and Sciences* Forthcoming (2024).

²⁰ Kahneman, *Thinking, Fast and Slow*, 8, 10-13, 28, 237; Simon, “What is an ‘Explanation’ of Behavior?”

associative interpreting that includes a heuristic, or calculus of associatively generated weights articulated as judgments, decisions, and choices and is inherently susceptible to bias.²¹

Cognitive psychology sources associative understanding and thinking to a network of cognitive processes it subsumes under the rubric, “System 1.” It distinguishes this system from “System 2,” or “slower,” “deliberate,” and “effortful” understanding and thinking.²² System 1, as explained, is an unconscious narrating machine that generates interpretations of phenomena by automatically associating prevailing (current) experiences with past experiences, including emotive and situational ones, and or with things experienced contemporaneously or within a relatively short period.²³ Its “core” is associative memory.²⁴ Its capital features, which Kahneman sources to human evolution and corresponds to “stereotyping,”²⁵ include its smooth, fast, and effortless operation, cognitive economy, and fantastic ability to effect interpretations, decisions, and judgments spontaneously from limited information. Indeed, System 1 excellence correlates inversely to the amount of information it is presented. It is more effective at producing interpretations when given less information as long as the data are consistent.²⁶ System 2, in contrast, is concentrated interpreting. It is slow, effortful, violates rules of cognitive economy, and usurps cognition when “things get difficult” and System 1 processing fails.²⁷ The two systems are distinct, but not unrelated. System 1 “suggestions” are commonly adopted by System 2 and always in one way or another influence its outcomes, and System 2 endorsements of System 1 “intuitions and impressions” and “impulses” typically turn them into “beliefs” and “voluntary actions.”²⁸

One appeal of the cognitive psychology of common sense to the prospect of machine common sense, as implied by the reports of Booch et al.,²⁹ Ganapini et al.,³⁰ and Rossi and Loreggia,³¹ and

²¹ Kahneman, *Thinking, Fast and Slow*; Trujillo, “Thinking, Fast and Slow, in the Life-World: A Comparison of D. Kahneman and A. Schutz’s Interpretations of Common Sense.”

²² Kahneman, *Thinking, Fast and Slow*, 13, 15, 21; Stanovich and West, “Individual Differences in Reasoning: Implications for the Rationality Debate?”

²³ Kahneman, *Thinking, Fast and Slow*, 20, 22, 87-88.

²⁴ *Ibid.*, 13.

²⁵ *Ibid.*, 90, 169.

²⁶ *Ibid.*, 21, 51, 87.

²⁷ *Ibid.*, 20-25, 62-67.

²⁸ *Ibid.*, 24-25.

²⁹ Grady Booch et al., “Thinking Fast and Slow in AI,” in *The Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI-21)* (Proceedings of the AAAI Conference on Artificial Intelligence, 2021).

³⁰ Marianna Bergamaschi Ganapini et al., “Thinking Fast and Slow in AI: The Role of Metacognition,” *arXiv* (2021).

³¹ Francesca Rossi and Andrea Loreggia, “Preferences and Ethical Priorities: Thinking Fast and Slow in AI” (paper presented at the 18th International Conference on Autonomous Agents and MultiAgent Systems (AAMAS 2019), Montreal, 13-17 May 2019).

setting aside its perspicuity and experimental basis, is the parallels that can be readily inferred between System 1 associative processing and the correlative functions encompassed by machine learning. Machine learning is basically an associative (correlative, “trial and error”) machine that computationally refines its functions (algorithms) through feedback refinements (e.g., “back propagation,” “deep reinforcement learning”) in its statistical weighting; Marcus and Davis call it the “art of making educated guesses based on data.”³² The technology is considered “deep” when it contains more than one “neural network” (layer of correlative processing) to effect those refinements sequentially.³³

Where the cognitive-psychological model seems to fall short, however, where, notwithstanding its remarkable insights and implications, the perspective fails to provide a more complete understanding of common sense that might further inform the development of machine common sense, is its neglect of the question of meaning. Cognitive psychology convincingly explains common sense as a network of cognitive associations but does not explore in depth their meaning dimensions. Association is neither equivalent to nor a surrogate for meaning. Meaning sublates association. The associations subsumed under “System 1,” including their location in associative memory, are posited as relations between perceptions and memories rather than discerned as they are factually intended (experienced) and endured (lived), which is as meanings. The person is not a network of cognitive links. The person is a human person. He is as he factually experiences himself to be: an unfurling totality (a happening) who happens (comes to pass) as the meaning of the things he experiences. He is consciousness understood in the broadest (phenomenological) sense as the “life-world” (*Lebenswelt*) (World). He is, as the following reflections purport, the phenomenon of common sense.

These observations do not subordinate the cognitive psychology of common sense to its phenomenology. They only identify limitations commensurate with its approach and methods. Both perspectives are empirical in the fundamental sense. Each in its own way strives to let the matter investigated dictate its understanding. They are both motivated by ἐπιστήμη (*epistēmē*), which “fundamental means to know one’s way in something, to stand essentially within it, to under-stand

³² Gary Marcus and Ernest Davis, *Rebooting AI: Building Artificial Intelligence We Can Trust* (New York: Pantheon Books, 2019), 45, 51, 55.

³³ Melanie Mitchell, *Artificial Intelligence: A Guide for Thinking Humans* (New York: Farrar, Straus and Giroux, 2019), 24-42.

or be capable of it,”³⁴ or, said another way, to interpret things rigorously. Cognitive psychology renders common sense by propositionally explaining it. It develops its theses experimentally. Phenomenology renders common sense by propositionally elucidating it. It arrives at its theses experientially. It labors to exhibit common sense as it is factually (directly) given and, in its Husserlian iteration, is committed to an agreement between its findings and the “tested results” of the psychological sciences.³⁵

3. The phenomenology of common sense

By far the most concise and comprehensive phenomenology of common sense has been put forth by Alfred Schutz. Schutz’s phenomenology of the life-world—what he formally calls, “a constitutive phenomenology of the natural attitude”—is based on the transcendental phenomenology authored by Husserl. It does not submit to the notion of transcendence connoted by Husserl’s later attempts to establish “an ontology on the basis of the processes of subjective life,” however, and which Schutz concluded had “not succeeded;”³⁶ refrains from supporting Husserl’s nomination of a “second” phenomenological reduction pertaining to a “pure” egological sphere, instead confining itself to the initial reduction (also introduced by Husserl) of suspending the natural attitude (general thesis) to transform consciousness—or “intentionality” in the sense of consciousness understood as the invariable, “consciousness of”³⁷—from lived experiencing into a matter of phenomenological reflection;³⁸ and recoils from Husserl’s later rendition of constitution as “creation (*Kreation*).” The notion of constitution implied by the appellation, “constitutive phenomenology of the natural attitude,” means “clarification” of the meaning constituents (“*cogitata*”) of consciousness and reducing them to “intentional operations of the on-going conscious life.”³⁹ The method is

³⁴ Kenneth Maly, “The Transformation of ‘Logic’ in Heraclitus,” in *Heidegger on Heraclitus: A New Reading*, ed. Kenneth Maly and Parvis Emad (Lewiston: The Edwin Mellen Press, 1986), 95.

³⁵ Alfred Schutz, “Some Leading Concepts of Phenomenology,” *Social Research* 12, no. 1 (1944), 95.

³⁶ “The Problem of Transcendental Intersubjectivity in Husserl,” in *Collected Papers III: Studies in Phenomenological Philosophy*, ed. I. Schutz (The Hague: Martinus Nijhoff, 1966), 82-84; “Husserl’s Importance for the Social Sciences,” in *Alfred Schutz Collected Papers I. The Problem of Social Reality*, ed. Maurice Natanson (The Hague: Martinus Nijhoff, 1962), 149.

³⁷ Edmund Husserl, *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy: Third Book: Phenomenology and the Foundation of the Sciences* (The Hague: Martinus Nijhoff Publishers, 1980), 119.

³⁸ Schutz, “The Problem of Transcendental Intersubjectivity in Husserl.”

³⁹ *Ibid.*, 83.

transcendental-phenomenological insofar as it exercises the phenomenological reduction to transcend (stand apart from, “go beyond”) lived experiences and distill consciousness into its basic elements in relation to its transcendent (experienced object).⁴⁰

Constitution, as thought by Schutz, particularly in the sense of the typical constitution of phenomena (things), and which is also aligned mostly with the transcendental phenomenology of Husserl’s earlier thinking, particularly as evinced in *Ideas*,⁴¹ carries a second meaning distinct from (although related to) its understanding as “clarification.” The notion of constitution in Schutz’s phenomenology, in line with Ricoeur’s interpretation of the phenomenon,⁴² does not mean “constructing” or, even less, “creating,” and although akin to the pre-philosophical, *γενέσθαι*, does not denote the contemporary (metaphysical) understanding of genesis. It also suggests neither a solipsistic interpretation of reality, the encapsulation of meaning within an isolated subject, nor the correspondence of subjective meaning to discrete objects, as might be inferred from Sokolowski’s interpretation of constitution as the “product of the dialect” between the “real” and “subjectivity.”⁴³ Constitution signifies the ongoing process comes to pass as the generating-illuming of the meaning of phenomena, including human phenomena and the World, “the universal horizon of all horizons,”⁴⁴ it intends (experiences). It is the dynamic (evolving, unfolding) “accord” (*Fügung*),” to borrow loosely from Heidegger’s hermeneutic phenomenology, between *νόησις* (*nóēsis*) (the experiencing of something) and its *νόημα* (*nóēma*) (that which is the experienced). It is comparable to the hermeneutic-phenomenological meaning of “accord,” which Heidegger, as translated by Emad, tells as “the joining (*Fuge*) which indicates how something fits (*einpasst*) into something else, how both join in the jointure so that there is accord.”⁴⁵ Could this notion of constitution be likened to a synthesis (*σύνθεσις*)? Although the moniker is not uncommon, it leans toward a subjectivistic interpretation of constitution, as suggested by the originary meaning of *θέσις* (*thésis*), which is to put

⁴⁰ Schutz, “Some Leading Concepts of Phenomenology,” 82.

⁴¹ Husserl, *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy: Third Book: Phenomenology and the Foundation of the Sciences*.

⁴² Paul Ricoeur, *Husserl: An Analysis of His Phenomenology*, trans. Edward G. Ballard and Lester E. Embree (Evanston: Northwestern University Press, 1967), 9.

⁴³ Robert Sokolowski, *The Formation of Husserl’s Concept of Constitution* (The Hague: Martinus Nijhoff, 1970), 219.

⁴⁴ Schutz, “Type and Eidos in Husserl’s Late Philosophy,” 93-94.

⁴⁵ Parvis Emad, “Heidegger’s Originary Reading of Heraclitus—Fragment 19,” in *Heidegger on Heraclitus: A New Reading*, ed. Kenneth Maly and Parvis Emad (Lewiston: The Edwin Mellen Press, 1986), 111; Martin Heidegger, *Heraklit: Der Anfang Des Abendländischen Denkens Logik. Heraklits Lehre Vom Logos*, (GA 55), (Frankfurt am Main: Vittorio Klostermann, 1979), 141.

forth or posit, and θεωρέω (*theoréo*), which to see as well as to contemplate. Constitution, as connoted by Schutz when he describes the typical constitution of meaning, can be more accurately likened to συνίστημι (*synístēmi*) (note its root, «ἴσθημι») in the originary sense of standing together in mutually indebtedness as an “interwoven” or “*connected whole*.”⁴⁶ Thought this way, which corresponds to its articulation in Husserl’s earlier phenomenology, the interpretation comes closer to the originary meaning of νόησις and νόημα. It equates constitution to the indissoluble moment comprising the experiencing of things as they are given to experiencing, where “things” are understood in the broadest, prephilosophical sense as phenomena (φαινόμενα). It indicates things as an irrevocable noetic-noematic jointure commensurate with “the phenomenological principle of man-World relatedness” (no World without consciousness; no consciousness without the World).⁴⁷ It also corresponds with the phenomenological observation: “the *meaning of a thing is what is meant*,”⁴⁸ or, as said more tellingly in the original Greek, «νόησις ἐστὶν ὅτι νοεῖται» (*noēsis estin óti noeítai*), which more keenly connotes its phenomenological (and etymological) kinship with φύσις, λέγειν, and ποιεῖν.⁴⁹

Schutz’s constitutive phenomenology of the natural attitude, where “natural attitude” means the everyday mode of comprehending everyday life, including its taken-for-granted (although always questionable) certainty in (as well as reliability on) the everyday meanings lived, and is synonymous with the “general thesis” (*Generalthese*),⁵⁰ amounts to an explication of the phenomenon of common sense.⁵¹ It purports an elucidation of the way the world of daily life is constituted by the everyday or “wide awake” person going about the business of everyday living. Common sense, thought phenomenologically, is not encapsulated within a hypostatized subject, or the human person

⁴⁶ Husserl, *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy: Third Book: Phenomenology and the Foundation of the Sciences*, 126.

⁴⁷ George Kovacs, *The Question of God in Heidegger’s Phenomenology* (Evanston: Northwestern University Press, 1990), 62.

⁴⁸ Edmund Husserl, *Cartesian Meditations: An Introduction to Phenomenology*, trans. Dorion Cairns (The Hague: Martinus Nijhoff, 1960), 46.

⁴⁹ Kenneth Maly and Steven Davis, “Reading Heidegger Reading Heraclitus—Fragment 112,” in *Heidegger on Heraclitus: A New Reading*, ed. Kenneth Maly and Parvis Emad (Lewiston: The Edwin Mellen Press, 1986), 135-136, 144.

⁵⁰ Schutz, “The Problem of Transcendental Intersubjectivity in Husserl,” 51; Husserl, *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy: Third Book: Phenomenology and the Foundation of the Sciences*, 101-106.

⁵¹ Aron Gurwitsch, “Introduction,” in *Collected Papers III: Studies in Phenomenological Philosophy*, ed. I. Schutz (The Hague: Martinus Nijhoff, 1966); Maurice Natanson, “Introduction,” in *Collected Papers I: The Problem of Social Reality*, ed. Maurice Natanson (The Hague: Martinus Nijhoff, 1962); Joaquin Trujillo, “The Phenomenon of Common Sense and the Thinking of Alfred Schutz,” *Filosofija. Sociologija* 32, no. 3 (2021).

individuated as an object standing against a world of objects (and other objectified subjects). It is the everyday (mundane) experiencing of things. It is the everyday human person interpreted “atheoretically” (directly, prereflectively, factually),⁵² before “reflection begins” and “any possible analysis,”⁵³ as he comes to pass in daily life, as consciousness (intentionality).

Schutz exposes (a) the life-world as the phenomenon of common sense and (b) the phenomenon of common sense as the phenomenon of typification. Common sense, which he also corresponds to everyday understanding and thinking, as well as *Verstehen*,⁵⁴ as he reveals it, is typical understanding and thinking. It is understanding and thinking comprised essentially of taken-for-granted typifications and the unconscious (automatic, silent, effortless; also taken-for-granted) process of typifying. Everyday understanding is straight up typical interpreting and more or less a passive process. Everyday thinking is an action, which too is taken for granted. It is typical interpreting that includes a typical calculus, motive, project, or means-end relation articulated as a judgment, choice, or decision.⁵⁵ The life-world, as Schutz reveals it, is not only the “common-sense world.”⁵⁶ More fundamentally, it is the typical world, where “typical world” does not connote “a world,” but, more radically, as Merleau-Ponty underscores, “the world.”⁵⁷ It is the factual world, or simply, “*World*,”⁵⁸ the singular manifest whose unfolding in the natural attitude is distinguished by its typicality.⁵⁹

Typifications are “appresentations.”⁶⁰ They are unconscious (taken-for-granted, automatic, tacit) presuppositions that carry “along open horizons of anticipated similar experiences” and are “awakened” associatively through intentional contact with νοήματα (*noémata*) (things that are experienced) whose generic traits correspond with anticipations of their meaning;⁶¹ prepredicatively denote the way things are, have been, and should be; “characterize” intended

⁵² Friedrich-Wilhelm von Herrmann, *Hermeneutics and Reflection: Heidegger and Husserl on the Concept of Phenomenology*, trans. Kenneth Maly (Toronto: University of Toronto Press, 2013).

⁵³ Maurice Merleau-Ponty, *Phenomenology of Perception*, trans. Colin Smith (London: Routledge & Kegan Paul, 1962), vii, x.

⁵⁴ Alfred Schutz, “Concept and Theory Formation in the Social Sciences,” *The Journal of Philosophy* 51, no. 9 (1954), 264.

⁵⁵ “Common-Sense and Scientific Interpretation of Human Action,” *Philosophy and Phenomenological Research* 14, no. 1 (1953), 17-20.

⁵⁶ Robert Bierstedt, “Review: The Common Sense World of Alfred Schutz,” *Social Research* 30, no. 1 (1963).

⁵⁷ Merleau-Ponty, *Phenomenology of Perception*, xviii.

⁵⁸ Husserl, *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy: Third Book: Phenomenology and the Foundation of the Sciences*, 51.

⁵⁹ Alfred Schutz, “Language, Language Disturbances, and the Texture of Consciousness,” *Social Research* 17, no. 3 (1950), 388.

⁶⁰ “Type and Eidos in Husserl’s Late Philosophy;” “Language, Language Disturbances, and the Texture of Consciousness.”

⁶¹ “Language, Language Disturbances, and the Texture of Consciousness,” 388; “Type and Eidos in Husserl’s Late Philosophy,” 110.

phenomena as things “recognized” and “foreknown,” but, nevertheless, also “novel;”⁶² permeate consciousness, sway within the constitution of everyday meaning, and together form “a horizon of familiarity and pre-acquaintanceship” that is “taken for granted until further notice as the unquestioned, though at any time questionable, stock of knowledge at hand;”⁶³ and are interwoven with their social and communicative contexts. They sway within the vernacular, which Schutz calls “the typifying medium *par excellence*”⁶⁴ and “a treasure house of preconstituted types” each connoting “an open horizon of unexplored typical contents.”⁶⁵ As described by Schutz: “By naming an experienced object, we are relating it by its typicality to preexperienced things of similar typical structure, and we accept its open horizon referring to future experiences of the same type, which are therefore capable of being given the same name.”⁶⁶

Other essential features of typifications include their (a) sharedness, (b) practicality, and (c) open-endedness. Typifications are public meanings. They are common, anonymous meanings who belong generally to everyone participating meaningfully (i.e., an in-group) within the same social situation and to none of them specifically. Their meaning is largely social determined and “approved,”⁶⁷ and although also always biographically influenced, reflecting the unique personalities and histories, are sufficiently clear, coherent, and consistent to allow in-group members “a reasonable chance of understanding and being understood.”⁶⁸ The originary possibility of their sharedness is not a product of society or culture, however. It is the immanent intersubjectivity of the life-world, as conveyed in the phenomenological observation: “*subjectivity is intersubjectivity*”⁶⁹

Typifications are practical (πρακτικός). They rejoin a world of “eminently practical interests,” are coupled to the “necessity of complying” with life’s “basic requirements,”⁷⁰ and not only signify the way things are, have been, or should be, but also connote the “can” (“able to effect”) and “must.” They

⁶² “Language, Language Disturbances, and the Texture of Consciousness,” 388.

⁶³ “Common-Sense and Scientific Interpretation of Human Action,” 5.

⁶⁴ *Ibid.*, 10.

⁶⁵ Schutz, “Language, Language Disturbances, and the Texture of Consciousness,” 393.

⁶⁶ *Ibid.*, 393.

⁶⁷ Alfred Schutz, “Symbol, Reality and Society,” in *Symbols and Society: Fourteenth Symposium on Science, Philosophy, and Religion*, ed. Lyman Bryson, Louis Finkelstein, Hudson Hoagland, and R.M. MacIver (New York: Harper and Brothers, 1955), 193.

⁶⁸ “The Stranger: An Essay in Social Psychology,” *American Journal of Sociology* 49, no. 6 (1944), 501.

⁶⁹ Joaquin Trujillo, “Intersubjectivity and the Sociology of Alfred Schutz,” *Bulletin d'Analyse Phénoménologique* 14, no. 7 (2018), 6. For further discussions of the notion of intersubjectivity in Schutz’s phenomenology see also “Alienation and the Sociology of Alfred Schutz,” *Bulletin d'Analyse Phénoménologique* 14, no. 8 (2018).

⁷⁰ Alfred Schutz, “On Multiple Realities,” *Philosophy and Phenomenological Research* 5, no. 4 (1945), 534, 549.

speak to the meaning of intentionality as *πρᾶγμα* (*prāgma*) (the being or thingness of things), a source language word that carries the full significance of *νόησις* and *νόημα*. They also speak to the essential meaning of common sense as *κοινή πράξις* (“common-sense praxis,” or, more precisely, “common praxis”).⁷¹ *Πρᾶγμα* is ownmost (*Wesen*) to the life-world. It is more fundamental, more originary, than the “pragmatic motive” Schutz contends “governs” the natural attitude, and in many ways is analogous to the natural attitude itself. Its discernment illumines (a) *νόημα* as the essential meaning of *νόησις* and (b) the radical dependence of human being on things to be. Its immanence to typifications is implied in Schutz’s corresponding rendition of the life-world as “the world of working.”⁷² Its essential significance to typifications and their meaning-constituting function, its resonance within the ownmost of appresentations, is also suggested in his elucidation of the phenomenon of “working” in World-constitution. The wide-awake person, as Schutz describes him, “integrates” in his “working” and by his “working” his “present, past, and future into a specific dimension of time;” he “realizes” himself as a “totality” in his “working acts;” he “communicates with others through working acts;” he “organizes the different spatial perspectives of the world of daily life through his working acts.”⁷³

Typifications are open-ended. They carry along, as Schutz describes it, a “horizon” of possible familiar experiences. They permeate experiencing as “typical characteristics” of things “still not actually experienced but expected to be potentially experienced.”⁷⁴ Commensurate with this open-endedness is their inherent adaptiveness. Ownmost to typifications, which also contain the human impetus to comprehend coupled to the pragmatic dimensions of everyday living, is the potentiality to assimilate the personally relevant and typically interpreted characteristics of newly encountered phenomena. Typifications are self-propelled toward gradations of greater efficacy (although not necessarily greater consistency, clarity, or coherence) in relation to their social and communicative contexts, the projects of consciousness, and the exigencies of factual life. This dynamism includes the compulsion to transmute themselves through heuristic modifications intuited to liberate the power to comprehend. Whether this outcome is achieved is another matter. In accord with the limitations ingredient to human comprehending, including its susceptibilities to bias, indolence,

⁷¹ “Symbol, Reality and Society;” Trujillo, “The Phenomenon of Common Sense and the Thinking of Alfred Schutz,” 272.

⁷² Schutz, “On Multiple Realities,” 537.

⁷³ *Ibid.*, 537.

⁷⁴ Schutz, “Language, Language Disturbances, and the Texture of Consciousness,” 388-389.

obtuseness, obstinacy, and errancy, as well as the impulse to avoid cognitive dissonance, also harbored within typifications is the impulse to repel meaningful change even if it means improving life's chances. An essential element of common sense, one that is scarcely addressed by Schutz and setting aside the phenomenon's predilection toward conformity and complacency, which he also hardly addresses, is its aversion to adaptation in the face of its interpretive shortages and failures. Typifications contain an adaptive impulse counterbalanced by a compulsion toward homeostasis. They are taken for granted as long as they work and defend themselves against meaningful change as long as they work well enough to accomplish subjectivity to whatever degree it wants to accomplish itself.

The way typifications constitute meaning is commensurate with their essential open-endedness. Typifications generate-illuminate meaning associatively as an interpreting process that Schutz, following Husserl, denotes as "apperceptive transference (*apperzeptive Übertragung*).⁷⁵ In apperceptive transference meaning is not constituted by reaching back into the stock of knowledge at hand and referencing previous experiences, but instead occurs forward through typical anticipations already noetically-noematically in play within an interpretive comportment of "preacquaintedness and familiarity" (i.e., the stock of knowledge at hand).⁷⁵ In other words, newly encountered phenomena typically similar to the types constituted from preexperienced ones are "apperceived from the outset" as things of the same types and the meanings of the existing types are "apperceptively transferred" to them.⁷⁶ Herein lies the unceasing cycle of typical constitution. Typifications, regardless any aversion to transmutation, are always in "flux."⁷⁷ Consciousness incessantly absorbs into its stock of knowledge at hand the typically interpreted meanings affiliated with newly intended things and transfigures it, or rather, the stock of knowledge passively transfigures itself, through the reinforcement, modification, or rectification of existing types or the constitution of new ones. The typical experiencing of things as they are meant ceaselessly evolves itself, moment by moment, through multifarious and multidimensional confirmations, adaptations, and extensions of its "inner" and "outer" horizons. It continuously transmutes itself through the constitution of renewed types affiliated (a) with newly encountered *noémata* and (b) the meaning

⁷⁵ "Type and Eidos in Husserl's Late Philosophy," 93, 96.

⁷⁶ Ibid., 96; Schutz, "Language, Language Disturbances, and the Texture of Consciousness," 389.

⁷⁷ "Type and Eidos in Husserl's Late Philosophy."

contexts wherein they are situated, including, ultimately, “the total horizon of all possible experiences” (the World).⁷⁸

4. The question of obscurity and pervasiveness

What might be inferred from Schutz’s phenomenological investigation (discovery) of the life-world about the obscurity and pervasiveness the MCS program ascribes to the “nature” of common sense and contends is challenging efforts to “articulate and encode” it? It suggests the impediments may correspond to four factors: (a) the initiative’s apparent interpretive start-point, (b) its definition of common sense, (c) common-sense’s factual immediacy, and (d) its factual immanence. The first factor appears to be perspectival. The (MCS) BAA suggests the program may be presupposing interpretive biases that could be obfuscating its understanding of common sense. The program’s theoretical basis, the developmental psychology of the foundations of common sense, which, according to the BAA, reduces the phenomenon to “six domains” that either constitute “distinct and relatively autonomous” systems of “knowledge” or “interact from the beginning of life,” imply an individuation of the human person as an object and common sense as one of his objectified attributes. The phenomenology of common sense reveals them to be neither. It does not predicate (and strives again and again to avoid prepredicating) the individual as an object (dehumanized subject) or common sense as a cognitive capacity, which means also objectified. It also neither encounters nor reduces the person to “fundamental building blocks” or a composite of “core domains.” Common sense, thought phenomenologically, is the way the everyday person constitutes and happens as the life-world of the natural attitude. It is the world of daily life. It is the phenomenon of typification. It is the interpreting corresponding with everyday experiencing, and whose ownmost, according to Schutz, is typical, pragmatic, intersubjective, and coupled to the primordial impulse to comprehend and be. It corresponds with consciousness understood phenomenologically as the jointure of *νόσις* and *νόημα*—an irrevocable *accord* of the experiencing of things and that which is experienced, and neither an idealization, a free-floating meaning disconnected from concrete facticity, nor a localized (discrete) process embodied within a localized subject detached from localized things, including the body, environment, earth, and other subjectivities. Common

⁷⁸ Ibid., 94-99; Schutz, “Language, Language Disturbances, and the Texture of Consciousness,” 388-389.

sense means the life-world (of the natural attitude) itself. The phenomenon of common sense is the typically constituted, intersubjective World that, or, more precisely, “who,” each and every human person together transcends to (occurs as, endures).

The data feeding the phenomenological interpretation of common sense are not derived *theoretically* (reflectively). They are derived *atheoretically*. They are seized by the thinker enduring the life-world as it is directly given. Schutz’s phenomenology of common sense originates from an appropriation of (human) reality “re-trieved” and “re-collected” through the principal method of transcendental phenomenology: the phenomenological reduction (ἐπιτομή). The phenomenological reduction, as employed by Schutz, is the deliberate orientation whereby the thinker endeavors to suspend his presuppositions and judgments about things, particularly the predications and prepredications belonging to the natural attitude, to let them directly, in the originary sense of ἀποφαντικός (apophantic), show themselves to/within consciousness.⁷⁹ The project, like transcendental phenomenology generally, as von Hermann explains, becomes “reflective” and “stands *outside* what is to be seen” when it methodically withdraws itself from “lived” (atheoretical, factual, prereflective) experiencing to reduce its matter over against its discernment of consciousness (intentionality), which it also derives directly within the reduced sphere.⁸⁰

Schutz’s phenomenology begins with an apophantic understanding of common sense and propositionally concludes with a reflective one that strives to articulate it methodically without resorting to reflectively induced objectifications that can obscure its findings or alienate their articulation from their factual givenness (ἀπόφανσις). A fundamental difference between this approach and the perspective implied by the BAA, is the MCS program appears to assume a theoretical understanding of common sense—where “theoretical” is understood in the source language sense as θεωρητικός (contemplative, speculative, posited) and subsumes both predicative and prepredicative determinants—then goes on to interpret it theoretically (reflectively). The developmental psychology of the foundations of common sense, which, as articulated in the BAA, sources the phenomenon to multiple cognitive domains,⁸¹ appears to connote some degree of experiential blackout that may be impeding efforts to render the phenomenon as it factually is.

⁷⁹ “Phenomenology and the Social Sciences,” in *Collected Papers: The Problem of Social Reality*, ed. Maurice Natanson (Dordrecht: Springer, 1962),” 122-123; Husserl, *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy: Third Book: Phenomenology and the Foundation of the Sciences*,” 110-114.

⁸⁰ Herrmann, *Hermeneutics and Reflection: Heidegger and Husserl on the Concept of Phenomenology*,” 77, 87, 98.

⁸¹ “Broad Agency Announcement: Machine Common Sense (MCS),” 7.

These observations suggest that it is not common sense that is inherently obscure (equivocal, ambiguous), as alleged, but rather, the perspective the MCS program has assumed that may be problematic. The thinking implied by the initiative suggests an objectifying-frame of mind that attempts to define common sense quadratically. It suggests it may be apperceptively transferring (unconsciously transposing) unto common sense presuppositional objectifications that are clouding the reflective understanding of its apophantic significance.

The MCS program's definition of common sense seems to imply similar interpretive biases. Evaluated phenomenologically (and cognitive-psychologically), the understanding of common sense it has borrowed from Wikipedia does not define common sense. It conveys some of its general features and corresponds it with other related human phenomena generally but does not specify exactly what common sense is. The attempt to supplement the Wikipedia definition with references to contextual knowledge that is assumed and shared, intuitive physics, intuitive psychology, and "the knowledge of facts that an average adult possesses"⁸² adds breadth, but largely fails to balance deficits. Neither do references to the developmental psychology of its human foundations. Phenomenology reduces common sense to the phenomenon of typification. Cognitive psychology reduces it to cognitive association. Although both theses require unpacking to be reasonably understood, they are methodically consistent with their data, are concise, distill common sense to simplest operations, and, incidentally, also suggest its availability to operationalization. The definition of common sense proposed by the MCS initiative, including all of its supplements and references, for the most part appears to miss these general criteria.

Read phenomenologically, the MCS program's definition of common sense, as implied by mentions of "nearly all," "intuitive physics," and "intuitive psychology," appears to be unintentionally alluding to the inherent potentiality of human being to comprehend, a phenomenon hermeneutic phenomenology affiliates with λόγος (*lógos*), or human being (*Dasein*) exhibited as the factual disclosedness and comprehension of being (the being of beings, its own being, and being as such), inclusive of the disclosing-comprehending power of language (λέγειν).⁸³ This potentiality is indeed

⁸² Ibid.; Gunning, *DARPA Machine Common Sense (MCS) Proposers Day - Program Overview*.

⁸³ Emad, "Heidegger's Originary Reading of Heraclitus—Fragment 19," Martin Heidegger, *Contributions to Philosophy (From Enowning)*, trans. Parvis Emad and Kenneth Maly (Bloomington: Indiana University Press, 1999); Thomas Kalary and Frank Schalow, "Attunement, Discourse, and the Onefold of Hermeneutic Phenomenology: Recent Heidegger-Literature and a New Translation of His Work in Critical Perspective," *Heidegger Studies* 27 (2011); Maly, "The Transformation of 'Logic' in Heraclitus," William J. Richardson, *Heidegger: Through Phenomenology to Thought*, with a new preface by the author. (New York: Fordham University Press, 2003).

deeply related to common sense. It is its factual basis. The possibility of common sense is harbored within the inherent human potentiality to comprehend and say. Common sense is a pragmatic manifestation of this power. A unfiltered reading of the BAA (in hand) suggests its alignment with the phenomenological diagnosis of its definition of common sense. Its explanation of common sense appears to be conflating the phenomenon with the developmental-psychological interpretation of its human foundations. It reiterates elements pertaining to the subject of TA1's research agenda, particularly the "general understanding of how the physical world works," which speaks to the domains of "Objects" and "Places," and "a basic understanding of motives and behaviors," which connotes the domains of "Agents" and "Social World."⁸⁴

One reason the MCS program may be defining common sense as an "unbounded problem,"⁸⁵ and, hence, one that is inherently obscure, as well as "slippery,"⁸⁶ is because the problem it appears to be proposing to solve is largely unbounded. A careful reading of the BAA, particularly TA1, struggles to find a plan to simulate the human foundations of common sense to produce machine common sense. Instead, it finds a plan for the most part aligned with its definition of common sense. It discovers a program that appears to have set out to simulate the human foundations of common sense to simulate the human foundations of common sense. TA2, whose objective is to provide an environment that tests and evaluates T1 progress,⁸⁷ gives few if any indications it will mitigate the assessed discrepancy between the program's stated and implied goals. TA3, which aims to produce "a common-sense knowledge repository,"⁸⁸ does somewhat, but, assessed phenomenologically, fails to attack the problem of common sense directly or address it in its entirety. There is also little in the BAA to suggest TA3 may not suffer from the same objectifications implied by the program's interpretive start-point. Language matters, and the BAA's repeated association of machine common sense with the words "understand," "understanding," "interpret," "experience" and "experiencing,"⁸⁹ not only implies a humanization (anthropomorphization) of machines, but also suggests an equivocal understanding of common sense and machine common sense.

⁸⁴ "Broad Agency Announcement: Machine Common Sense (MCS)," 5, 8.

⁸⁵ *Ibid.*, 6.

⁸⁶ Gunning, *DARPA Machine Common Sense (MCS) Proposers Day - Program Overview*.

⁸⁷ "Broad Agency Announcement: Machine Common Sense (MCS)," 7, 9.

⁸⁸ *Ibid.*, 7.

⁸⁹ *Ibid.*, 5-7, 10-11, 13.

Assessed phenomenologically, the obscurity the MCS initiative identifies in the “nature” of common sense also could be related to the phenomenon’s immediacy. The phenomenon of common sense, like experiencing generally (as well as the human to be), is distinguished by its “*averageness*’ (*Durchschnittlichkeit*).” It apophantically emanates its belongingness among the human phenomena “closest and well known” and “farthest and not known at all.”⁹⁹ It is lived atheoretically, is happens prereflectively, moment by moment, and operates silently, effortlessly, and automatically. Its correspondence with intentionality and the intentional constitution of meaning makes it remarkable elusive to exposition-contemplation (*θεωρητικοποίηση*). The everyday person captivated by the pragmatic demands of factual living, who automatically gives himself over to the immanently intersubjective World presupposed by himself and others as an epistemic certainty, is the phenomenon of common sense. He is the life-world typically constituted in the natural attitude. The investigator of common sense risks alienating himself from its direct significance insofar as he neglects to encounter (heed, care for, listen to) it atheoretically and automatically presumes objectifications, including those embodied in language, to interpret the phenomenon. These propositional reflections suggest that the problem of obscurity may be partly a methodological problem. It submits the possibility that the issue of obscurity could be a perspectival issue and not one inherent to common sense. The phenomenology of common sense propounds that it is not common sense that is obscure, but, rather, the attempt to render it that can be bewildering when not encountered as “who” it factually is.

The phenomenology agrees with the MCS program’s characterization of common sense as pervasive. The phenomenon of common sense happens everywhere all the time. It is analogous to the world of daily life. The world of daily life (the life-world of the natural attitude) is a common-sense world. Its constitution is dominated by typifications unceasingly and open-endedly constituting (typifying) the meaning of things. The phenomenon of typification sways ubiquitously within the intentional constitution of the World. The pervasiveness of typifications within intentionality is correlated to their immanent practicality (to their reliability responding to the pragmatic exigencies ingredient to factual life), open-endedness, sharedness, taken-for-grantedness, and social origination. The social composition of typifications, according to the

⁹⁹ Martin Heidegger, *Being and Time*, trans. John Macquarrie and Edward Robinson (New York: Harper & Row, Publishers, 1962),” 69.

phenomenology, is a fundamental factor determining their preponderance within the stock of knowledge at hand, consciousness, and the life-world. Whereas the MCS program for the most part neglects to specify the relation of common sense to social knowledge aside from references to the domains of “Agents” and “Social World,” the phenomenology does, quite explicitly, and so does cognitive psychology, although significantly less so, as seen in its explanation that the meanings referenced by the cognitive associations of everyday understanding and thinking are “shared,” communicable, and intersubjectively endorsed when transmitted through “words.”⁹¹ The stock of knowledge at hand is overwhelmingly populated by typifications; typifications overwhelmingly comprise socially determined and approved types; and socially determined and approved types invariably relate to particular in-groups and social contexts. Schutz tells it this way:

Only a small fraction of man’s stock of knowledge at hand originates in his own individual experience. The greater portion of his knowledge is *socially derived*, handed down to him by his parents and teachers at his social heritage. It consists of a set of systems of relevant typifications, of typical solutions for typical practical and theoretical problems, of typical precepts for typical behavior, including the pertinent system of appresentational references. All this knowledge is taken for granted beyond question by the respective social group and is thus “*socially approved knowledge*.”⁹²

When Schutz coincides typifications with the stock of knowledge at hand he does not suggest the latter to be a discrete part of consciousness, however. The implication would oppose the proposition corresponding the phenomenon of typification with intentional constitution and contravene the phenomenological interpretation of consciousness. The stock of knowledge at hand is not a subdivision of consciousness. It is not reducible to “core cognitive domains” or “fundamental building blocks.” Consciousness is its stock of types and these types incessantly constitute meaning in umpteen ways; it (consciousness) is constantly evolving into a renewed iteration of itself: the typical constitution of experiencing and the World. The signification of this stock as a “network,” as might be inferred from the cognitive psychology of common sense, or “matrix,” as perhaps could be construed (although incorrectly) from the hermeneutical-phenomenological discernment of the World as “a network (matrix) of relations (*Bezugszusammenhang*) of purposefulness,”⁹³ fails to

⁹¹ Kahneman, *Thinking, Fast and Slow*,” 74; Trujillo, “Thinking, Fast and Slow, in the Life-World: A Comparison of D. Kahneman and A. Schutz’s Interpretations of Common Sense.”

⁹² Schutz, “Symbol, Reality and Society,” 193.

⁹³ Kovacs, *The Question of God in Heidegger's Phenomenology*,” 63.

convey the preponderance of typifications in consciousness and their sway within World-constitution. The ownmost of the stock of knowledge at hand prescind proposals to equate it with a network or matrix. If anything, the stock of knowledge at hand exhibits features comparable to properties affiliated with systems that are chaotic, organized complex, adaptive, and dynamical. It can be tenably likened to a *fractal* that: is approximately self-similar, sensitive to initial conditions, changes through time, and “nowhere differentiable;”⁹⁴ is capable of changing itself “to adapt to a changing environment” as well as “change the environment” to “improve fitness;”⁹⁵ evolves through trajectories intractably elusive to precise forecasting (i.e., “perplexing to predict and control”);⁹⁶ comprises a large number of variables that are interrelated into an organic whole that exhibits emergent properties;⁹⁷ contains sizable numbers of attractors (equifinalities);⁹⁸ comprises interdependent elements, and few, if any, whose interrelations, many of which are nonlinear, are decoupled from the relations among elements outside the prescribed relational regime;⁹⁹ and “becomes complete at infinite time,”¹⁰⁰ meaning, when human being dies and transmutes into infinite nothingness, or the possibility of its impossibility (“non-being,” the end of consciousness and World).¹⁰¹ If the meaning structure of common sense indeed corresponds to a fractal, as its phenomenological rendition implies, then another reason is maybe afforded that propositionally answers the question of its alleged obscurity. As Baranger explains, if one observes a “volume,” in this instance, common sense, becoming “more and more fractalized,” its accommodation by consciousness becomes increasingly problematic and one experiences whatever understanding one may have about it “slipping away.”¹⁰²

⁹⁴ Benoit B. Mandelbrot, *The Fractal Geometry of Nature*, Updated and augmented ed. (New York: W.H. Freeman and Company, 1983); Yeliz Karaca and Dumitru Baleanu, “Evolutionary Mathematical Science, Fractional Modeling and Artificial Intelligence of Nonlinear Dynamics in Complex Systems,” *Chaos: Theory and Applications in Applied Sciences and Engineering* 4 (2022); Bar-Yam, *Dynamics of Complex Systems*.

⁹⁵ Michel Baranger, “Chaos, Complexity, and Entropy: A Physics Talk for Non-Physicists,” *New England Complex Systems Institute* (2000), <https://necsi.edu/chaos-complexity-and-entropy>,” 10; Karaca and Baleanu, “Evolutionary Mathematical Science, Fractional Modeling and Artificial Intelligence of Nonlinear Dynamics in Complex Systems;” Bar-Yam, *Dynamics of Complex Systems*,” 574.

⁹⁶ Karaca and Baleanu, “Evolutionary Mathematical Science, Fractional Modeling and Artificial Intelligence of Nonlinear Dynamics in Complex Systems,” 11.

⁹⁷ Baranger, “Chaos, Complexity, and Entropy: A Physics Talk for Non-Physicists,” 7; Bar-Yam, *Dynamics of Complex Systems*,” 11.

⁹⁸ Baranger, “Chaos, Complexity, and Entropy: A Physics Talk for Non-Physicists,” 9; Ludwig von Bertalanffy, “An Outline of General System Theory,” *The British Journal of the Philosophy of Science* 1, no. 2 (1950).

⁹⁹ Baranger, “Chaos, Complexity, and Entropy: A Physics Talk for Non-Physicists,” 9.

¹⁰⁰ *Ibid.*, 7.

¹⁰¹ Richardson, *Heidegger: Through Phenomenology to Thought*,” 75-79.

¹⁰² Baranger, “Chaos, Complexity, and Entropy: A Physics Talk for Non-Physicists,” 16.

5. Concluding remarks

This paper presents three “views” of common sense: the cognitive-psychological, phenomenological, and the one communicated by the MCS initiative. It has reviewed the first, laid out the second, and examined the third. The cognitive-psychological and phenomenological interpretations show some degree of mutual consistency. The extents of their correspondences, as well as their divergences, have been examined in a separate study.¹⁰³ Both methods are also empirical. Each in its own way (the first experimentally and the second experientially) strives to let its matter dictate its comprehension. The MCS program’s interpretation does not suggest meaningful correspondences with either perspective. Its definition of common sense, assessed phenomenologically, is equivocal, lacks parsimony, and appears to be confusing common sense with the developmental psychology of its human foundations. To the extent these assessed shortages are deviating the MCS program from its overarching objective, to mimic common sense in machines, is outside the scope of phenomenological analysis. But maybe the question should be asked. It would be aligned with the spirit of scientific discovery.

Maybe it should also be asked whether the simulation of common-sense’s essential operations, which cognitive psychology coincides with association and phenomenology exhibits as typification, inclusive of associative meaning processes, is a more efficient course to pursue than is the simulation of common-sense’s human foundations combined with the production of a common knowledge repository. Marcus and Davis appear to be aligned with the second alternative. They suggest the “path” to machine common sense should start with research focused on the implementation of “the core frameworks of human knowledge,” which they, similarly to the MCS program, view as an understanding of “time,” “space,” and “causality” coupled to “basic knowledge of physical objects and humans and their interactions.” These frameworks, they continue, should then be “embedded into an architecture that can be freely extended to every kind of knowledge, keeping always in mind the central tenets of abstraction, compositionality, and tracking of individuals.” They further recommend augmenting the system with “powerful reasoning techniques” that can reliably process complex, uncertain, and incomplete” knowledge; incorporate “perception, manipulation, and language” to “build rich cognitive models of the world;” and, “like a child,” voraciously learn “from

¹⁰³ Trujillo, “Thinking, Fast and Slow, in the Life-World: A Comparison of D. Kahneman and A. Schutz’s Interpretations of Common Sense.”

every possible source of information.”¹⁰⁴ The findings presented here, which do not propose to reify the understanding of common sense to its phenomenology, might suggest differently.

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¹⁰⁴ Gary Marcus and Ernest Davis, “Insights for AI from the Human Mind,” *Communications of the ACM* 64, no. 1 (2021).

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