

Ontological reaction norms and their distribution

Katherine Withy writes that “Given his hermeneutic project of bringing to light what is constitutively hidden from us, Heidegger has a methodological need for an ontological insight that takes place as a change of mood, in which entities recede or are put out of play.” She explains that

“This angst is not teen angst, or ‘existential angst’, or a midlife crisis (although it bears resemblances to each of these insofar as they involve ontological insight). . . . Perhaps the best way of describing angst, which captures what Heidegger needs from it methodologically, is as an ‘epiphany’ (in the Christian sense) or ‘apocalypse’ (in the Greek sense). Angst is the direct revelation of the ontological, which disrupts our falling being-amidst entities.”¹

Now Heidegger claims that ‘proper’ angst is scarce: “under the ascendancy of falling and publicness, ‘real’ anxiety is rare [»Eigentliche« Angst ist . . . selten].”² Whereas Lonergan observes that “insights are a dime a dozen.”³ Characterizing insight-phenomena as, respectively, rare and commonplace puts us in the domain of frequency distribution. Ian Hacking has made a case that explicit conceptualization of frequency distribution arose in the West rather late, not before the Renaissance: “In Europe we find glimmerings of a science of dicing in the fifteenth century. There is still not the slightest intimation that this might have applications to anything of interest to non-gamblers. . . . No one could solve [problems of chance] until about 1660, and then everyone could.”⁴

Hacking does not mention a mid-sixteenth century example of thinking in frequency distributions, Giovanni Della Casa’s *Il Galateo*; the introduction to which seeks to justify what—a treatise on good manners—looks on its face to be a mere bagatelle (*a multi parer frivolo*). Quite the contrary, Della Casa says,

¹ Katherine Withy, “The Methodological Role of Angst in *Being and Time*,” 43 *Journal of the British Society for Phenomenology* 195 (2012); as here: <https://repository.library.georgetown.edu/handle/10822/761592> p. 25.

² *Being and Time* (tr. John Macquarrie and Edward Robinson 1962) 234; *Sein und Zeit* 190.

³ “Observing lets intelligence be puzzled, and we inquire. Inquiry leads to the delight of insight, but insights are a dime a dozen, so critical reasonableness doubts, checks, makes sure.” Bernard J. F. Lonergan, *Method in Theology* (1971) 13. Yet “there exists the small but significant class of inverse insights.” “If inverse insights are relatively rare, they are far from being unimportant.” “an inverse insight has three characteristics: it supposes a positive object of inquiry; it denies intelligibility to the object; and the denial runs counter to spontaneous anticipations of intelligence.” *Collected Works of Bernard Lonergan Volume 3; Insight: A Study of Human Understanding* (ed. Frederick E. Crowe and Robert M. Doran 1992) 43, 50, 78.

⁴ Ian Hacking, *The Emergence of Probability: A Philosophical Study of Early Ideas About Probability, Induction and Statistical Inference* (2nd ed. 2006) 6, 5.

“everyone must each day many times [*molte volte*] deal with others and converse with them daily. Justice, fortitude, and the other greater and nobler virtues are called into service more infrequently [*più di rado*]. The munificent and magnanimous are not obligated to act generously all the time, for no one could behave in this way very often [*molto spesso*]. Similarly those among us who are strong and brave are required to display their valor and their noble qualities in action, but very rarely [*rade volte*]. Thus, while such talents easily surpass the former in greatness [*grandezza*] and sheer moral weight [*peso*], the virtues I consider surpass the others in number [*numero*] and frequency [*ispesezza*].”⁵

Study of manners prepares one to meet the most frequently encountered – in modern jargon the modal – situation. Della Casa claims also that the virtues and talents are themselves similar in their distribution to the distribution of situations calling for their service. We can go further and conjecture that the measure of a given talent is distributed in the same way when called into service. E.g., in combat “the strong and the brave” exert the talent common in this rarefied segment of the total situational range and yet also display occasionally a much scarcer quality of that talent. Provided, that is, we can rely on the account of a movie character, the gunfighter-Sheriff Little Bill Daggett, who explains to a visiting pulp novelist the infrequency of ‘dangerous men’ within the population of six-gun brawlers infesting the Cowboy West:

“Look son, being a good shot, being quick with a pistol, that don’t do no harm, but it don’t mean much next to being cool-headed. A man who will keep his head and not get rattled under fire, like as not he’ll kill ya. . . . Yeah, that’s why there’s so few dangerous men around like old Bob, like me. It ain’t so easy to shoot a man anyhow, especially if the son of a bitch is shootin’ back at you. I mean, that’ll just flat rattle some folks.”⁶

Sangfroid under fire is a rare grade of the fortitude it takes to engage in gun-battling; that fortitude itself a trait uncommon in the population as a whole. Overall the distribution of situations and talents is self-similar in this way.

Implicit in Withy’s account of ontological insight is a frequency distribution of shape and composition similar to the Della Casa-Little Bill distribution.⁷ As we’ve read above teen angst, ‘existential angst’, and midlife crisis all “involve ontological insight” to some degree, and these are common phenomena.

⁵ *Galateo or, the Rules of Polite Behavior* ([1559] tr. M. F. Rusnak 2013) 4.

⁶ *Unforgiven* (dir. Clint Eastwood 1992).

⁷ Urn-scheme similar: “No one supposes that there is any connexion between horse-kicks suffered by soldiers in the German army and blood cells on a microscope slide other than that the same urn scheme provides a satisfactory abstract model of both phenomena.” Herbert A. Simon, “On a Class of Skew Distribution Functions,” 42 *Biometrika* 425 (1955). The allusion is to the Poisson distribution.

Withy cites Heidegger's question, "Is there in Dasein an understanding findingness [*verstehende Befindlichkeit*] in which Dasein has been disclosed to itself in some distinctive way?"⁸ I.e., has experienced ontological insight. Withy describes two paths to the experience of ontological insight, 'breakdown' and 'noticing.' "For the ontological to become salient," she writes, "a special kind of mood must come over us – one that tunes us into the ontological rather than the ontic. The arising of this mood is a result of either 'breakdown' or 'noticing.'" Breakdown is the more intense experience, an experience of the "riskiness and fragility of human life," of "a fragility in meaning":

"On the analogy with tool breakdown, our openness to being misfires or malfunctions: a particular understanding of being shows itself to be untenable. This is an ontological crisis of the sort that Thomas Kuhn identifies prior to scientific paradigm shifts, or that Jonathan Lear draws out in the collapse of a culture. In ontological breakdown, we are forced to reassess and reevaluate our particular understanding of being. We turn from the entities we were dealing with and assess the adequacy of that in terms of which we make sense of them. We see that we were operating with a particular understanding of being, and so that we are ontological entities."⁹

Withy takes the less intense experience of 'noticing' to be the "paradigm case of tuning into the ontological;" and I understand her to mean here by 'paradigm' the modal or typical case:

"On the analogy with tool noticing,¹⁰ the ontological comes into salience without calling for reassessment and reevaluation of a particular understanding of being. It is a gestalt switch. I take this to be the paradigm case of tuning into the ontological. It strikes us *that we make sense of things*. There is no revealed fragility or inadequacy in our understanding of being, and no particular recalcitrant entity, that sets this off. We come to a moment, or a moment comes to us, when we notice or tune into ourselves as understanders of being, and so notice or tune into being itself. This might happen while reading Kuhn or Lear: it might happen while reading Heidegger. It might happen while walking down the street on a sunny Wednesday afternoon. It might happen [*sc.* to an individual] often, or rarely. It might not happen at all, in which case, I am one of those people who 'just don't get philosophy' – one of those people who will not, or cannot easily, tune into the ontological."¹¹

⁸ "The Methodological Role of Angst in *Being and Time*" 10.

⁹ *Id.* 13.

¹⁰ A phenomenon which she described earlier; in the ballpark with Wittgenstein's 'noticing an aspect;' the aspect that we are user-understanders of beings.

¹¹ "The Methodological Role of Angst in *Being and Time*" 14.

These observations lead one to conjecture that the distribution of the *grandezza*, the *peso* of ontological insight is some function of its frequency. Roughly: the intensity of ontological insight varies as the inverse of its frequency raised to some positive power: $I \propto 1/f^\alpha$. ‘Roughly’ because of the problem of measuring intensity and because it’s hazardous at the guessing stage to claim overmuch for a particular function.¹² Yet I still retain from Withy’s account the impression that this the-deeper-the-fewer distribution of ontological insight is quite skew, like the distribution of so many natural phenomena and human events.¹³ Like that of productivity distributed log-normally among members of a scientific research team. (“It is well-known that some workers in scientific research laboratories are enormously more creative than others.”¹⁴). If, having somehow finessed the measurement problem, we could model a large random sample of ontological insights by a suitable function, the bulk of the distribution would be – so goes the conjecture – populated by noticings, teen angst, ‘existential angst,’ and midlife crises, whereas breakdowns would be found only in the long tail of rarity.

¹² “The pathway of knowledge is littered with the wreckage of premature generalization.” M. G. Kendall, “Presidential Address: Natural Law in the Social Sciences,” 124 *Journal of the Royal Statistical Society. Series A (General)* 1, 5 (1961). After the publication of Benoit Mandelbrot, *The Fractal Geometry of Nature* (1982), its popularization in James Gleick, *Chaos: Making a New Science* (1987), and the encyclopedic Manfred Schroeder, *Fractals, Chaos, Power Laws: Minutes from an Infinite Paradise* (1991) power laws were suddenly everywhere. “There are lots of claims that things follow power laws, especially in the last ≈ 20 years, especially from physicists.” (C. Shalizi, 2010) Cold water was hosed on this enthusiasm in Cosma Shalizi, “So, You Think You Have a Power Law, Do You? Well Isn’t That Special?” <http://www.stat.cmu.edu/~cshalizi/2010-10-18-Meetup.pdf> .

¹³ “on the average, these things [natural phenomena and human events] proceed on a logarithmic or geometric scale. Another way of interpreting this relation is to say that small things are more numerous than large things, and there is a tendency for the step between sizes to be equal to a fixed fraction of the last [ordinally] preceding phenomenon or event.” Frank Benford, “The Law of Anomalous Numbers,” 78 *Proceedings of the American Philosophical Society* 551, 571 (1938). (Down at the courthouse misdemeanor assault cases are a dime a dozen, aggravated assault cases less frequent, and murder *ist selten*.) In 1996 Hill proved that “If distributions are selected at random (in any ‘unbiased’ way), and random samples are then taken from each of these distributions, the significant digits of the combined sample will converge to the logarithmic (Benford) [i.e., skew] distribution.” Theodore P. Hill, “A Statistical Derivation of the Significant-Digit Law”: <http://www.gatsby.ucl.ac.uk/~turner/TeaTalks/Benfordslaw/stat-der.pdf> .

¹⁴ William Shockley, “On the Statistics of Individual Variations of Productivity in Research Laboratories,” 45 *Proceedings of the Institute of Radio Engineers* 279 (1957). Shockley “investigated the output of 88 research staff members of the Brookhaven National Laboratory and found the distribution function of the number of papers published by them to be log normal, thus having a long tail.” Shockley modeled the conditions of the possibility of publishing a paper as an eight-step process, with the failure of any one step being sufficient to defeat the project of publication. So, “Given a set of investigators, let p_i be the probability that one of them is able to complete the i th step in the process. Then, assuming that the various probabilities are independent of each other, the probability P that our chosen investigator will produce a paper in a given time is the product of the probabilities that he successfully deals with each of the individual items, $P = p_1 p_2 \dots p_8$ and $\log P = \log p_1 + \log p_2 + \dots + \log p_8$.” Thus yielding (assuming the individual distributions of the $\log p_i$ values satisfy certain weak conditions) the log normal distribution, the one Shockley had initially observed in his survey of Brookhaven publications. See Elliott W. Montroll and Michael F. Shlesinger, “On $1/f$ noise and other distributions with long tails,” 79 *Proc. Natl. Acad. Sci. USA* 3380, 3381 (1982).

Such a function would model the distribution of a certain class of events in human experience. These events disclose an aspect of individual *Seinkönnen*, and the model would depict the variation of that aspect (“openness to the ontological”) in the population. Withy notes again the fact of this variability when she writes,

“What is important about angst in SZ is that it allows us to go further in our philosophising (even if we do not do so when we experience it). . . . A genuine openness to the ontological, a certain constellation of matterings and saliences, is crucial for engaging in philosophy beyond a certain point. We notice this most frequently when we teach students or speak with friends who ‘just can’t think philosophically’ – who cannot seem to get themselves into the right headspace. It is this philosophical attitude that Heidegger begins (but ultimately fails) to thematise in the analysis of angst in SZ.”¹⁵

Lonergan is characteristically blunt in his remark on the inter-individual distribution of insight:

“insight is a function, not of outer circumstances, but of inner conditions. Many frequented the baths of Syracuse without coming to grasp the principles of hydrostatics. But who bathed there without feeling the water, or without finding it hot or cold or tepid? There is, then, a strange difference between insight and sensation. Unless one is deaf, one cannot avoid hearing. Unless one is blind, one has only to open one’s eyes to see. The occurrence and the content of sensation stand in some immediate correlation with outer circumstance. But with insight internal conditions are paramount. Thus, insight depends upon native endowment, and so with fair accuracy one can say that insight is the act that occurs frequently in the intelligent and rarely in the stupid.”¹⁶

The ‘native endowment’ at play in both Withy’s account and in Lonergan’s is responsiveness (respectively, to the ontological and to the intelligible¹⁷), a responsiveness which varies both between and within individuals. Once again on variability Withy writes that

“Rather than explaining why being must be concealed, or even why we are entity-directed rather than not, Heidegger explains why some of us are more mired in our everyday environmental experiencing than others, and so do not or will not (or would rather not) experience angst and recognise (our) being. That is, he explains why being is concealed in an aggravated way in some cases. Schematically, instead of explaining why human nature is x, Heidegger explains

¹⁵ “The Methodological Role of Angst in *Being and Time*” 25.

¹⁶ *Insight* 29.

¹⁷ “direct insight meets the spontaneous effort of intelligence to understand . . . direct insight grasps the point, or sees the solution, or comes to know the reason . . . the conceptual formulation of direct insight affirms a positive intelligibility . . . By intelligibility is meant the content of a direct insight.” *Id.* 44.

why some of us are more x than others. (A theological analogy: explaining original sin vs. explaining why some people are especially sinful.)”¹⁸

Withy claims here that Heidegger has located and described the source of inter-individual variation in openness (responsiveness) to the ontological. She cites no text. My best guess is that she is referring to this passage in *Being and Time*:

“the mood of uncanniness remains, factually, something for which we mostly have no existentiell understanding. Moreover, under the ascendancy of falling and publicness, ‘real’ anxiety is rare. Anxiety is often conditioned by ‘physiological’ factors [*Oft ist die Angst »physiologisch« bedingt*]. This fact, in its facticity, is a problem *ontologically*, not merely with regard to its ontical causation and course of development. Only because Dasein is anxious in the very depths of its Being, does it become possible for anxiety to be elicited physiologically.”¹⁹

Why *oft*? Why scare-quote *physiologisch*? What in human awareness is not somehow physiologically bethinged? If we drop ‘*oft*’ and gloss *die Angst* per Withy as ‘the direct revelation of the ontological’ then we have the source of variation in such events—it is physiological variation. That is, if we take ‘anxious in the very depths of its Being’ to characterize a stimulus (a stressor, *Sein zum Tode*²⁰) in Dasein’s internal environment, then ontological variation results from differential responsiveness to that stimulus under differing conditions; conditions in both internal and external environments. The range of an individual’s differential responsiveness (openness) to the ontological is then the individual’s ontological reaction norm.

The term ‘reaction norm’ refers to “the set of phenotypes that can be produced by an individual genotype that is exposed to different environmental conditions.”²¹ In particular, to stress. We would only know, say Gerhardt and Kirschner, “the organism’s all-encompassing norm of reaction after it had been stressed in all combinations of conditions and durations of exposure.

¹⁸ “The Methodological Role of Angst in *Being and Time*” 22.

¹⁹ *Being and Time* 234; *Sein und Zeit* 190.

²⁰ “It is out of this possibility of not being that Dasein temporalizes itself and that being as such is disclosed.” Daniela Vallega-Neu, *Heidegger’s Contributions to Philosophy: An Introduction* (2003) 78.

²¹ Carl D. Schlichting and Massimo Pigliucci, *Phenotypic Evolution: A Reaction Norm Perspective* (1998) 51. “R. Woltereck (1909) proposed the term reaction norms (initially called ‘phenotypic curves’) to describe a striking phenomenon he observed in clones of the microscopic crustacean *Daphnia*. He found that during a season, samples of *Daphnia* from a given pond would be characterized by markedly different morphologies, with the head of the organism changing in both size and shape. To determine if differences between strains were constant, and therefore within the realm of genetics, Woltereck plotted the phenotypic trait head size against a measure of the environment for each clone of *Daphnia* studied. The results were the first published reaction norms, and showed differences in response of head size to food availability.” *Id.* 31.

The span of responses would encompass the entire range of phenotypes the organism could generate from its single genotype; it would reveal the total latent phenotypic variation within the organism that could be generated without new genetic variation.”²²

The term ‘phenotype’ “includes all the observable and functional features (traits) of an organism, that is, its anatomy, physiology, development, and behavior, and also all its conserved core processes.”²³ All means all:

“The *phenotype* includes all traits of an organism other than its genome. . . . The enzyme products of genes are a part of the phenotype, as are behaviors, metabolic pathways, morphologies, nervous tics, remembered phone numbers, and spots on the lung following a bout with flu. That is, the phenotype can be adaptive or pathological, permanent or temporary, typical or atypical of a species.”²⁴

Ethologists have undertaken the study of reaction norms of behavior:

“Instead of considering the actual behaviour of an individual (e.g. its ‘aggressiveness’), we view the relationship describing the behavioural response of an individual over an environmental gradient (‘context’) as the trait of interest for evolutionary analysis. When applied to the same genotype, this relationship is commonly known as a ‘reaction norm’ (RN). Because we apply this approach to behavioural traits of individuals, we refer to ‘behavioural’ RNs of individuals. The BRN subsumes information on how an animal behaves on average and how its behaviour changes over a gradient, specifying the precise form of the relationship between response value and environmental condition. The relationships between parental provisioning rate and offspring begging intensity, between dispersal behavior and wind velocity, or between anti-predator behavior and predation risk are all examples of BRNs. This approach treats both

²² Marc W. Kirschner and John C. Gerhart, *The Plausibility of Life: Resolving Darwin’s Dilemma* (2005) 78. N.B.: “There is a pervasive fantasy that genes are little packages of instruction that tell us and other animals how to behave. However, we know that in fact what genes do is determine the production of proteins. The expression of genes, which determines which proteins are currently being produced, is transient and context-dependent. Most important, even when we can track which proteins are manufactured when and by which genes, we still do not know how to explain behavior as a function of gene products.” Nevertheless we do observe that “some individuals are consistently more active, throughout their lives [i.e. across contexts], than others, and these more active individuals are more likely to leave the nest [to forage].” Deborah M. Gordon, *Ant Encounters: Interaction Networks and Colony Behavior* (2010) 33, 37. And: “Among the specialists and their more flexibly oriented nestmates, there exist in the honeybee and in at least some ant species a statistically distinguishable group sometimes referred to as elites. They are personally well above average in the tempo of their activities, their personal productivity, and the degree to which they stimulate and help organize nestmates.” Bert Hölldobler and E. O. Wilson, *The Superorganism: The Beauty, Elegance, and Strangeness of Insect Societies* (2009) 116-117.

²³ *Id.* 286.

²⁴ Mary Jane West-Eberhard, *Developmental Plasticity and Evolution* (2003) 31.

inter-individual and intra-individual variances in behaviour as meaningful (rather than as ‘noise’).²⁵

So we might take Aristotle’s schema of excess/mean/deficiency as describing three levels of on-average behavior; as the inter-individual variances of a trait, e.g. aggressiveness, in a population. Aristotle recognized that plasticity, intra-individual behavioral change along a gradient of situations, is a matter of individual *aisthēsis*, i.e., responsiveness.²⁶ At least in mice excessively aggressive personality is associated with unresponsiveness (rigidity) across contexts: “very aggressive mice do not adjust their level of aggression according to social context, whereas less aggressive mice do. Behavioral ecologists often assume that animal personality [on-average trait level] equates to the absence of plasticity, but such patterns illustrate that this is a misconception.”²⁷

Ethologists are keen to find adaptive equilibria—they call them ‘evolutionary stable strategies’—in the interactive mix of animal personalities and their plasticity within a population.²⁸ And ethologists might be inclined to seek an adaptationist story for Withy’s observed distribution of variable ontological openness. They might call the tale ‘Through assessment to *Ereignis*.’ A key text for this composition would come from Goodall’s work:

“Almost every chapter of this book has emphasized the complexity of the fusion-fission society in which the chimpanzee lives and has provided examples of the way in which he must cope with this ever-changing social scene. In the natural habitat heavy demands are placed on his cognitive abilities; if he cannot meet the challenge, he will fare less well than his more intelligent companions. He must be able to sort out and correctly respond to information from a wide variety of stimuli. His social environment may change at any moment from a

²⁵ Niels J. Dingenmanse, Anahita J. N. Kazem, Denis Réale, and Jonathan Wright, “Behavioural reaction norms: animal personality meets individual plasticity,” 25 *Trends in Ecology and Evolution* 81, 85 (2008).

²⁶ “Whereas some individuals pay attention to environmental stimuli and quickly adapt their behavior to the prevailing conditions, others show more rigid, routine-like behavior. Such differences in responsiveness (also termed coping style, reactivity, flexibility, plasticity) have been documented in many organisms including . . . humans.” Max Wolf, G. Sander van Doorn, and Franz J. Weissing, “Evolutionary emergence of responsive and unresponsive personalities,” 105 *Proc. Natl. Acad. Sci. USA* 15825 (2008). Aristotle: “But for deviating how much and in what way one is to be blamed is not easy to give an account of by a formulation, for such things are in the particulars, and the judgment is in the perceiving.” *Nicomachean Ethics* 1126b (tr. Joe Sachs 2002).

²⁷ “Behavioural reaction norms: animal personality meets individual plasticity” 82. Although the terms phenotypic plasticity and reaction norm are often used interchangeably, “plasticity always refers to a reaction norm, but a reaction norm is not necessarily plastic.” *Phenotypic Evolution* 52.

²⁸ See “Evolutionary emergence of responsive and unresponsive personalities,” and Niels J. Dingenmanse and Max Wolf, “Recent models for adaptive personality differences: a review,” 365 *Phil. Trans. R. Soc. B* 3947 (2010). Cf. Black’s two-trader-types model for maintaining relatively liquid, relatively efficient securities markets at approximate equilibrium most of the time. Fischer Black, “Noise,” 41 *The Journal of Finance* 529, 530-534 (1986); <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1540-6261.1986.tb04513.x>.

peaceful party of two or three individuals to a large and excited gathering, and he must be able to adjust his behavior accordingly.”²⁹

And another from West-Eberhard’s:

“[S]ocial competition screens access to virtually all crucial resources (food, space, protection, and mates). Humans engage in fine-tuned assessment of relatedness, status, and reciprocity in alliances and exchange, where they make precise quantitative assessments and remember them for long periods of time. For these reasons, hypotheses for the evolutionary increase in the size of the human brain seem to me most convincing when they deal with social aspects of judgment and intelligence, such as use of language or the expansion and assessment of social alliances, and least convincing when they address ecological aspects, such as tool making or throwing ability of hunters. Throwing ability of warriors would be more credible, but not as convincing as assessment of alliances and tactics on the battlefield, where an unending, runaway process of evolution under social selection would apply.”³⁰

Yet it may seem as implausible to you as it does to me that ontological openness has adaptive value, and more plausible to take it instead as spandrel,³¹ a by-product of some aspect of some capacity of assessment, an artifact obscure to selection, social or other; and its distribution as the outcome of a stochastic process no less opaque.

DCW 3/24/2023

²⁹ Jane Goodall, *The Chimpanzees of Gombe: Patterns of Behavior* (1986) 565.

³⁰ *Developmental Plasticity and Evolution* 464.

³¹ S.J. Gould and R. C. Lewontin, “The spandrels of San Marco and the Panglossian paradigm: a critique of the adaptationist programme,” 205 *Proc. R. Soc. Lond. B* 581 (1979).