



# A POLANYIAN APPRAISAL OF LIKERT-SCALE MEASUREMENT IN SOCIAL PSYCHOLOGY<sup>1</sup>



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## ABSTRACT

*Rating scales that link numbers to verbal labels are ubiquitous in social psychological research and are used to re-express individuals' attitudes on wide-ranging matters in quantities that can be treated statistically. These re-expressions pay tribute to an objectivist framework, but at the expense of eclipsing the powers of personal knowing Polanyi attributes to other minds. This fact comes to the fore in the present paper through an investigation of Polanyi's analysis of linguistic indeterminacy, indication and symbols, and the application of neurological models to persons who are competent to make sense of their own lives. Accrediting the result of this inquiry compels one dedicated to Polanyi's thought to wonder how social psychology ought to be conceived. Clues to an answer appear in the educational bonds formed between mentors and pupils in the transmission of cultural lore.*

“What do I mean when I say ‘the pupil’s capacity to learn *may* come to an end here’? ... [W]hat am I doing with that proposition? Well, ... I wanted to put that picture before him, and his *acceptance* of the picture consists in his now being inclined to regard a given case differently: that is, to compare it with *this* rather than *that* set of pictures.”

Ludwig Wittgenstein, *Philosophical Investigations* (1953, 57)

Likert-scales have a lengthy history in social psychology and are widely used even today for the measurement of attitudes, which Gordon Allport (1935) once famously identified as “probably the most distinctive and indispensable concept in contemporary American social psychology” (798). Although complexities abound in experts’ discussions of the subject (e.g., Eagly & Chaiken, 1993; Schwarz & Bohner, 2001), attitudes are characteristically portrayed as individuals’ favorable versus unfavorable evaluations of target objects. They include about every conceivable entity one could develop a disposition toward, including rapidly presented polygons and ideographs (Monahan, Murphy, & Zajonc, 2000), mundane laboratory tasks (Festinger & Carlsmith, 1959), national affiliations (Golec de Zavala, Cichocka, Eidelson, & Jayawickreme,

2009; Staub, 1997), sociocultural outlooks (Altemeyer, 1998; Pratto, Sidanius, Stallworth, & Malle, 1994), and religious beliefs (Altemeyer & Hunsberger, 1992; Hunsberger, 1989). The technique bearing his name was pioneered by Rensis Likert in 1932 as an improvement over L.L. Thurstone's more "laborious" (6) approach, and most Likert-scales operate by simply associating numerical values with words that express graded levels of agreement ("1: Strongly agree") or disagreement ("5: Strongly disagree") with a series of statements—e.g., "We must strive for loyalty to our country before we can afford to consider world brother-hood" (Likert 1932, 17).<sup>2,3</sup>

Importantly, first-time students of psychological research may wonder what assurance they can have that the statements, labels, and numerical values depicted in Likert-scales appear the same to different persons. How, after all, are they to verify that one respondent's reading of a statement, and the rating he or she selects in relation to it (e.g., "5: Strongly disagree"), are interpreted in the same way by other respondents? Moreover, how can they guarantee that individuals perceive the difference in meaning between adjacent ratings (e.g., "1: Strongly agree" and "2: Agree") in an equivalent way, or even whether these perceptions remain consistent across different statements? At one time, these students' instructors may have puzzled over similar problems. But having come to trust that any such divergences are "washed out" or are of negligible "practical" importance when the ratings of many respondents get averaged together, they escape the weight of their doubts and offer the same service to students by training them to think along similar lines.

Michael Polanyi's philosophy of personal knowledge, however, encourages us to do otherwise. It countenances the hesitations of students and those their instructors originally felt as clues to a genuine deficit in Likert-scale measurement that is not resolvable or made negligible by statistical procedures, but is, instead, *disguised* by them. The goal of the present paper is to investigate the nature of this disguising—what it is, how it happens, and whose purpose it serves—by drawing on several of Polanyi's insights, including his discussion of linguistic indeterminacy, his work with Harry Prosch on the phenomena of indication and symbolism, and his portrayal of neurological models applied to persons competent of asserting their own purposes. As the argument unfolds we will see that the word-meanings contained in Likert-scale instruments are not only indeterminate, but that they say nothing without being indwelt and asserted by a person who uniquely circumscribes their meaning. These circumscriptions get hidden behind numerical values reflecting psychologists' own allegiances, and in granting this we will be compelled in the end to ask what a Polanyian conception of social psychology looks like. Despite having to postpone a developed answer to a later essay, enough will be said here regarding it to justify Sigmund Koch's (1999a) observation that psychologists committed to the scientific study of humanity may find Polanyi's philosophy "*too liberating*" (111). Because the respect Polanyi pays to other minds is presupposed in all that follows, a summary of his reflections on this point is offered here before we begin.

### Polanyi's Respect for Other Minds

Relatively early in *PK*, Polanyi notes how infants' primitive modes of orienting themselves in the world (e.g., looking, touching, tasting) are akin to those of other species, but he also highlights their capacity for language. It enables them to engage in sustained thinking, grants them access to "the whole cultural heritage of [their] ancestors" (69), and has no equal in lower animals. A graded transition exists for Polanyi between these two kinds of knowledge—i.e., knowledge we acquire through basic sensory experiences and integrate into skilled performances we cannot fully express (e.g., swimming or riding a bicycle; *PK*, 49-50), and knowledge we can cognize in speech or other symbols (e.g., a recipe, musical score, or map). The former

he calls tacit knowledge, and the latter explicit, but one should not suppose that these are independent dimensions because they have different names. In truth, they are interwoven, with tacit knowledge being the more fundamental of the two (*TSOM*, 12). It pervades all manifestations of what we know, even when what we know is highly formalized, as in science and mathematics (*TSOM*, 13). These extraordinary feats of articulate intelligence have their roots in our primitive existence too and are foreshadowed for Polanyi in “[t]he groping movements by which worms explore the path in front of them” (*PK*, 388; see also *TSOM*, 16).

A defining feature of tacit knowing is its power to integrate particular clues into coherent totalities. This integration is often automatically performed at the level of vision (e.g., distinguishing a figure from a background), but at the level of abstract thought aspiring toward true portrayals of reality (e.g., a tremendous scientific breakthrough), it is achieved responsibly and effortfully in a skillful act of a person serving standards he or she holds to be universal (e.g., *PK*, 106). It is by trusting one’s body and cultural training as the preconditions for any skillful performance aspiring to universal relevance that the individual accepts his or her existence as an opportunity to investigate reality and search for the truth (*PK*, 252, 269). Consequently, if through one’s self-accredited powers of knowing clues are integrated that imply the presence of other living beings and, beyond this, beings possessing rational minds capable of responsible action, creative problem solving, believing and knowing, then by extension, one accredits those other minds with all the capacities one recognizes his or her own mind to possess (*PK*, 343-346; see also *TSOM*, 33-34). Such accrediting entails shouldering the obligation to relate to them accordingly. This, in a nutshell, is why Polanyi acknowledges the reality of other minds. Indeed, as comprehensive entities, they are more real for him than cobblestones (*TD*, 32-33). Moving forward, it is imperative that we not forget the aforementioned obligation. It has a bearing on the kind of relationship a Polanyian perspective sees as fitting between researcher and those researched, or, indeed, between any persons.

### Linguistic Indeterminacy

Why is it that Polanyi believes persons are indispensable to circumscribing the meaning of words and the statements they contribute to? We can answer this question by consulting his discussion of precision in descriptive speech. He opens it with the following observation: “[W]e must accept the risks of semantic indeterminacy, since only words of indeterminate meaning can have a bearing on reality and that for meeting this hazard we must credit ourselves with the ability to perceive such bearing” (*PK*, 251). The notion of “semantic indeterminacy” is important for recognizing what kind of precision we can expect from our words, including those printed in the items of Likert-scale instruments, and what—or, rather, who—decides their meaning, in the final analysis. It points us back to earlier material in *PK* where Polanyi discusses the operational principles of language and speaks of the “double indeterminacy” of our articulate systems (95).

In connection to the former, Polanyi identifies two “laws” of special importance—that of Poverty and of Consistency. The Law of Poverty states that in order for a language to be functional it “must be poor enough to allow the same words to be used a sufficient number of times” (*PK*, 78). Polanyi illustrates this necessity by inviting us to imagine a “millionfold” enrichment of our language with the addition of  $23^8$  eight-letter, code word substitutes for “each different sentence ever printed in the English language” (*PK*, 78). Although these codes may, at first blush, appear to create greater economy of communication by summing up entire sentences in single-word replacements, the avalanche of additions would, in fact, destroy our very ability

to learn them. Words acquire their meaning through repeated usage, and the addition of 23<sup>8</sup> code words would either prevent repetition from ever occurring or make it so rare as to defy the possibility of learning.

The significance of this becomes apparent when we note how our experience of reality is continually changing—no two moments are ever exact repetitions. If they were, we would not even recognize that time had passed (*PK*, 79-80). In consequence, a finite number of words must be applied to an infinitely fluctuating scene; or, said differently, a single word must be able to apply to *every conceivable* manifestation of its referent. This is why “only words of indeterminate meaning can have a bearing on reality” (*PK*, 251) and it presents an obvious complication for consistent usage. According to the Law of Consistency, “[o]nly when repeatable utterances are used consistently [a ‘deliberately imprecise’ term, Polanyi says] can they have a definite meaning” (*PK*, 79), and “we can achieve consistency only by identifying manifestly different situations in respect to some particular feature” (*PK*, 80). This “requires,” he adds, “a series of personal judgments” (*PK*, 79) about what aspects of some experience cohere as its significant and defining features and what aspects of it are okay to ignore.

Every time we use the words of our language, we make such judgments, and by them we “shape” (*PK*, 97) their meaning. In ordinary cases, these judgments are so subtle, implicit or habitual as to escape notice, but in exceptional cases they are not. Novel experiences impel us to *rely* on our words and associated concepts to make sense of them even while we *reconsider* their appositeness for this very purpose. When Polanyi speaks of the “double indeterminacy” of our articulate systems, it is this simultaneous reliance and reconsideration he is referring to (*PK*, 95; see also 112). However, novelty should not be made too much of. It is, indeed, possible to rely on language even while reconsidering ordinary happenings, but, of course, it is not very convenient to do so. Whichever is at issue, the point is the centrality of the person in deciding one way or another whether his or her words are adequately shaped to fit experience. One’s language community offers guidance, but no preordained solution. In this way, Polanyi destabilizes the presumed simple correspondence between our words and experiences in order to throw us back on ourselves as the ones responsible for saying and discerning what we mean. But—and this is crucial—he does so with the continued reassurance that we are competent to make such judgments (*PK*, 91).

This is evidently a critique of the objectivist desire to narrow the boundaries of meaningful speech to that which maps one-to-one onto experience, but it is also a check on the nominalist who champions the “open texture” of words (*PK*, 113). As already noted, to have any bearing on reality whatsoever, the meaning of our language must remain receptive to new generalizations and re-interpretations. But we must ask, what prevents the openness of our words from veering into complete vacuity, one that would permit us, for instance, to designate a new species of owl as a skyscraper, alligator, apple pie, or sparrow? “Indeed,” asks Polanyi, “why should we ever say one thing rather than another, and not pick our descriptive terms at random?” (*PK*, 110). This is the next problem to concern us, and Polanyi’s answer is two-fold. It involves 1) recasting the meaning of truth as the rightness of concepts within their proper framework, and 2) appealing, as above, to the personal role of the speaker in judging this rightness within that framework.

Regarding the first answer, Polanyi says, “the principle which must guide us when adapting the meaning of words, so that what we say shall be true [is this]: the corresponding conceptual decisions must be right—their implied allegations true” (*PK*, 111). In the example above, we say owl rather than sparrow because the former, as an extension of the concept *owls* “makes sense; while a modification of our conception of sparrows ... makes nonsense” (*PK*, 111). It does so in a way analogous to chemists’ changing the definition of isotopes to include deuterium when it was discovered. According to the original definition of isotopes, deuterium

did not qualify because it was “chemically separable from its fellow isotopes” (*PK*, 111). This fact, however, was ignored by chemists who elected instead to restrict the definition of isotopes to elements which, despite their separability, maintain an equal nuclear charge. Their grounds for this? The fact that maintaining the first definition of isotopy would lead to a classification of deuterium in the periodic system that “would have been misleading to the point of absurdity” (*PK*, 111).

For those with little education in chemistry (including the author), this example is particularly apropos because it reveals how the rightness of conceptual reforms hangs upon standards of judgment that are appreciated and exercised rightly by those deemed competent to do so. There is something *in* chemists’ sense of “absurdity” that is opaque to outsiders, not even fully effable by them, and yet absolutely integral to their judgments about sensible and insensible classifications in the periodic system—judgments that are not arbitrary, but seek to uphold standards chemists believe have an authentic bearing on reality. We can say the same with respect to morphologists when they identify a new species of owl as an “owl” rather than a “sparrow.” Their justification for adapting the one concept rather than the other lies in their distinctive training. Only portions of this training manifest in rules that are explicitly defensible. Its more vital aspects exert their influence through the feelings of satisfaction morphologists rely on for making judgments.

Between owls and isotopes, morphology and chemistry, the degree to which the terms of our judgments about true generalizations and conceptual reforms can be explicitly and precisely stated varies. But even though precise articulation may be greater in chemistry than morphology, the personal contribution of the scientist is not nullified. Granting this brings us to Polanyi’s second answer to nominalism. We see it effectively in his analysis of tests we make to assess the precision of our descriptive words (*PK*, 251). These words designate things that are not in turn designated but experienced. When we call a designation precise, we apply to the word a test that cannot itself be made the subject of testing without introducing an infinite regress—i.e., we cannot go on asking, “Is the test demonstrating the designation’s precision itself precise, and how about the test of the test, etc.?” Polanyi concludes, “[t]he precision of a word will ultimately always rely, therefore, on a test which is not precise in the same sense as the word is said to be” (*PK*, 251). The regress stops when we accredit the person performing the test with the power to declare its precision.

When we say that a word is precise (or apt, or fitting, or clear, or expressive), we approve of an act of our own which we have found satisfying while carrying it out. We are satisfied by something we do in the same way as when we make sense of blurred sights or faint noises; or when we find our way or recover our balance. We properly declare the outcome of this personal comprehension of our own, by saying that a word which we are using is precise (*PK*, 252).

Responding to objectivism and nominalism in this manner reveals that for Polanyi language is an indeterminate phenomenon whose meaning is always managed by personal decision. We must add, then, by extension, that words say nothing on their own, but only when asseverated by a person—just as a statement of fact lacks the status of a sentence until an individual is prepared to stand behind it (*PK*, 27-28). With respect to the words Polanyi uses to express the fundamental beliefs of his philosophy, he puts it this way:

The words I have spoken and am yet to speak mean nothing: it is only *I* who mean something *by them*. And, as a rule, I do not focally know what I mean, and though I could

explore my meaning up to a point, I believe that my words (descriptive words) must mean more than I shall ever know, if they are to mean anything at all (*PK*, 252).

What does all of this say about Likert-scale measurements? First, it says that the unasserted statements contained in them are inert on their own, “no better than...unsigned cheque[s]; just paper and ink without power or meaning” (*PK*, 28). They neither say nor mean anything until the individual brings them to life by pouring him- or herself into them as resources for expressing his or her experiences and beliefs. When laying down numeric responses to them, the individual affirms or disaffirms their bearing on this material, yet these responses are not *precise* in any impersonal or exhaustively formalizable sense. Ineliminable penumbras continue to surround them that are not blemishes or failures of exactitude but stand to the individual as parts awaiting integration into a whole. *They are clues to a person* who knows his or her meaning and means more than he or she knows (*TD*, 4).

But are not these penumbras recognized by psychologists in their notion of variability—i.e., the idea that people differ in quantitatively specifiable ways? Variability points not to the necessary indeterminacy of language’s relation to experience and the participation of persons in discerning meaning, but to the sum of the mathematical deviation of *numbers* (e.g., individuals’ scale totals) in a sample from their mean, squared and divided by an adjusted sample size.<sup>4</sup> Indeterminacy for psychologists, therefore, applies to the sum of scores’ ( $X$ ) squared distances from an aggregate representative quantity of greater interest to them ( $\bar{X}$ ). That this is so is evident in how psychologists refer to these indeterminacies as “noise” or “error” and seek by their methods and statistical adjustments to minimize them as far as possible. Likert scale ratings are, thus, not respecting of semantic indeterminacy as Polanyi conceives it, but of statistical indeterminacy; or, to say it differently, psychologists’ techniques conceal semantic indeterminacy by introducing statistical indeterminacy in its stead. This qualifies for Polanyi as a pseudo-substitution because it disguises the unformalizable personal contribution to deciphering meanings behind numerical values that can be treated formulaically, supposedly require little-to-no such deciphering, and appear, therefore, more scientifically objective (*PK*, 16-17). Such substitutions are used “to play down man’s real and indispensable intellectual powers for the sake of maintaining an ‘objectivist’ framework which in fact cannot account for them” (*PK*, 16-17).

In the vicinity of this quotation, Polanyi offers his own illustration of pseudo-substitution. He references objectivists’ use of “simple,” “economical,” and “symmetrical” to characterize excellent scientific theories, and he notes how such words imply criteria for evaluation that are impersonal and confined to the palpable. They are not, however, fitting depictions of Einsteinian relativity, which no responsible scientist would exclude from the rank of excellent theories. Its sublimity is found for Polanyi in its rationality, and he insists that such terms as “simple” are used for “smuggling” into our thinking this “essential quality” of excellent theories because “a mistaken conception of objectivity forbids us openly to acknowledge [it]” (*PK*, 16). To refrain from the pseudo-substitution would imply that science has a bearing on the metaphysical, that “those peculiar intellectual harmonies” we call “rational” in ourselves have the potential to put us in contact with what is rational in nature (*PK*, 6, 11, 13, 16; see also *TSOM*, 20-21).

In this case, the pseudo-substitution is a *smuggling in*, but in relation to Likert-scales and respondents’ ratings thereof, it is a *disguising out of notice* individuals’ personal participation in expressing what they believe and know. Despite this difference, the purpose of maintaining an objectivist picture of reality is served in both cases.<sup>5</sup> Diagnosing the use of numbers in Likert-scales in this way is our first step towards witnessing how respondents’ minds and frameworks get overshadowed by those of the psychologists who study them.

In the section that follows, we show the importance of this observation by examining Likert-scale reporting in light of Polanyi and Prosch's application of subsidiary and focal awareness to the experience of metaphor. They draw out two phenomena in relation to it that are particularly relevant for our purposes—namely, indication and symbols.<sup>6</sup> Our treatment of these will reveal how the pseudo-substitution brought to light here takes on a meaning for researchers that respondents do not share and thereby reinforces the idea that it is the formers' meanings that hold pride of place in social psychology.

### Indication and Symbols

Polanyi and Prosch address indication and symbols in their discussion of metaphor and as part of their larger effort to extend personal knowledge from its roots in bodily operations to a wide range of "coherent entities" or meanings—e.g., "Michelangelo's *Moses*, Beethoven's Ninth Symphony, the virtue of justice, and the Christian God" (*M*, 67)—that naturalistic philosophies have taught us to doubt as mere artifacts of material processes and psychological needs. Concerning indication, Polanyi and Prosch observe that a word "bears on something else which is its meaning" but that "[a] word and its object are not equal partners in this association" (*M*, 69). The object or meaning is of greater importance.

Were we to come upon Trafalgar Square in London, for instance, and there be directed to the Nelson Column by a tour guide pointing and uttering the words, "Nelson Column," we would not treat the latter as equal in importance to the object. Indeed, the guide's words and pointing would have low intrinsic interest and occupy subsidiary awareness relative to the column which would have high intrinsic interest and occupy focal awareness. We would rely on the tour guide's pointing and speaking as clues we integrate into a coherent knowledge of the Column. Whereas the name "will be remembered only because of its meaning," say Polanyi and Prosch, "the Column will be remembered for its own sake" (*M*, 69). As other examples of this from-to relationship in semantic indication they mention "road signs...maps or drawings by engineers," and "mathematical formulas" (*M*, 70). Readers are encouraged also to recall the story Polanyi tells of sharing letters written in foreign dialects with his English-speaking son. He had to double check the language the correspondence arrived in before passing it on. Why? Because however "vividly aware of the meaning conveyed by the letter" he was, he "yet [knew] nothing whatever of its words" (*M*, 57): "I have attended to them closely" says Polanyi, "but only for what they mean and not for what they are as objects" (*M*, 57).

A different and more complicated phenomenon of meaning-making is found in symbols where an object of little-to-no significance in itself becomes significant to a person for its ability, upon his surrender to it, to harmonize a range of otherwise diffuse personal experiences (*M*, 71). Before me on my desk, for instance, is a small and imperfect stone carving that in itself is hardly the height of beauty. It would recall little or nothing to anyone and be of little value in the marketplace. What it recalls and brings into coherence when I ponder it, however, are a variety of events surrounding a long-needed respite and the hope of other respites to come. This humble symbol, like all symbols (flags, medals, tombstones), retain the subsidiary-focal distinction observed in indication above, but the positioning of intrinsic interest is reversed—i.e., what is subsidiary now has a stronger intrinsic interest than what is focal. This reversal is intended to show how symbols are such only for those who are prepared to give themselves over or surrender to the relevant objects. While the capacity to experience objects as symbols is surely native, it must also be properly cultivated. This latter fact shows how training in scientific thinking has the potential to divest its students of their symbols. When material reality is made ultimate, and all else illusory or derivative, the carving on my desk remains just that, a carving, and nothing more. But when meaning is respected and the capacity for

experiencing it nurtured, individuals have the potential to get “*carried away*” by such objects (*M*, 71). That is, the tremendously important, yet scattered and subsidiary experiences of their lives get “*embodied*” in the objects they treat as symbols, and these objects, in turn, “reflect back upon [individuals’] subsidiaries, fusing [their] diffuse memories” (*M*, 73).

I would now like to fold Likert-scale assessments into our discussion, showing how they relate to indication and symbols as discussed by Polanyi and Prosch. Doing so will require that we depict the situation separately for respondents and researchers. In hospital rooms, pain ratings are sometimes requested of especially young patients with numbers linked to stylized human faces expressing graded levels of discomfort (e.g., Hicks, von Baeyer, Spafford, Korlaar, & Goodenough, 2001; Wong & Baker, 1988). To a visitor who sees such scales pictured on the wall, as they sometimes are, the numerical values hold little intrinsic interest relative to the faces. Like the tourist pointing to the Nelson column, the quantity points subsidiarily to the far more interesting focal object of a human expression; and to the suffering patient, both the numerical value and face are subsidiary to the focally absorbing experience of pain. Although with other Likert-scale tools the phenomenon of interest may press less urgently for attention, the situation is similar. The widely cited instrument by Mirels and Garrett (1971) for capturing the Protestant work ethic is a case in point. Individuals presented with this measure respond to a series of 19 statements—e.g., “There are few satisfactions equal to the realization that one has done his best at a job,” “Life would have little meaning if we never had to suffer,” and “A distaste for hard work usually reflects a weakness of character” (41)—using quantities ranging from -3 (“I disagree strongly”) to +3 (“I strongly agree”). Each numerically tagged affirmation or dissension across these 19 statements stands for the respondent as a subsidiary and relatively uninteresting pointer to a focally vital feature of a way of life he or she submits to as authoritative.

Progressing through the 19 items, however, the phrases respondents encounter and serially set their seal to may take on a greater significance, such that their concluding experience of the instrument has some kinship with a symbol’s ability to integrate the diffuse features of their lives. It differs, however, in three ways: the depth of surrender it evokes, the scope of integration it provides, and its interchangeability with other objects. A designation distinct from “symbol,” therefore, seems warranted. We will adopt the word *token* for this purpose. A good example is found in the labels that popular measures of personality assign to respondents. Such instruments are not employed in social psychological research, do not always rely on Likert-scale measurements (e.g., they may, instead, use “True”/ “False” designations), and do not directly reference a cultural outlook as Mirels and Garrett’s (1971) instrument does. Nevertheless, just as those who discover their “personality types” may feel that their distinctive attributes are brought into coherence by the label they are given (e.g., “introvert”), so those who respond to Likert-scale measures in social psychology may experience something similar (e.g., “Whatever these 19 statements represent to psychologists, they certainly picture to me some important beliefs I hold”).<sup>7</sup>

Indeed, unlike popular personality assessments, individual contributors to social psychological research walk away with limited knowledge about the specific dimensions of their lives that have been assessed. Nothing akin to personality labels is typically offered them, nor indeed any news of their individual results. Thus, to suggest that the Likert-scales encountered in research are experienced by respondents as tokens of their lives is not to say that they always are, but only that they sometimes and *at best* are. It is to acknowledge such scales’ potential for introducing coherence where it may be lacking while simultaneously emphasizing how unlikely they are to evoke the surrender a revered flag or anthem does, be as encompassing as a personal hero’s tombstone, or as irreplaceable as a precious heirloom. Tokens can be taken up for a time and later left



or forgotten in the place of others, but stained-glass depictions of John Wesley that recall his ministry and esteem for hard work cannot. For those reared to embrace the way of life he honored, such objects inspire a level of surrender and scope of integration that Mirels and Garret's (1971) scale can neither approach nor replace.

Shortly we will contrast this situation with that of researchers, for whom the notion of symbol remains relevant. To prepare for this, however, we should first ask what activity among researchers parallels the respondent's work of indication in completing a Likert-scale assessment. Recalling the tour guide's pointing to the Nelson Column, we can see the many members of a researcher's sample standing in a similar capacity. They ( $X_1, X_2, \dots, X_N$ ) point via their individual scale averages ( $\bar{X}_1, \bar{X}_2, \dots, \bar{X}_N$ ) to the aggregate quantitative characteristics (e.g.,  $\bar{X}, s^2$ ) of a psychological construct (e.g., the Protestant work ethic). In so doing they occupy the researcher's subsidiary awareness, holding little intrinsic interest to him or her except for their ability to numerically cohere into a focally more interesting statistical object.

Thus, right away, we see a point of division in the role of the numerical for respondents and researchers. For the former, numbers are proxies for words of indefinite meaning that they employ to personally assert the bearing of statements of comparable indefiniteness on their lives. Researchers, on the other hand, never approach respondents' lives. They turn instead to pseudo-substitutions commensurate with their social scientific framework in order to license their focal interest in aggregate quantities that permit generalizations. But this suggests that researchers have a myopic focus on numbers to the exclusion of their non-numerical meanings, and this is not so. Numerical representations hold ascendancy for researchers in the analysis phase of their work, when they are computing variables and examining their statistical relation with others. The non-numerical meaning of these variables holds ascendancy for them in the interpretive phase—i.e., when researchers translate their results back into the theories of psychology and relate them to real-world anecdotes. In truth, the two are never wholly divorced from one another. They stand rather in an asymmetrical relationship that researchers shift the direction of depending on their activities.

A vital question we have to address is what permits researchers to transition so seamlessly between numerical and non-numerical meanings. Our answer will appear in the following section. The point here is simply to acknowledge researchers' movement between numbers and non-numerical meanings and to highlight how the former assumes an importance to them that *never* emerges for respondents. It is also to say that whatever non-numerical meanings researchers turn to for interpretive purposes, they reflect personal discernments researchers make within a framework that holds their allegiance, not the discernments respondents make within their own. The degree of their coincidence or divergence is an open question not resolvable by statistics.

The above suggests another distinguishing feature between respondents and researchers. Whereas serial indication in Likert-scale items may transition them to a token for respondents, serial statistical mapping of Likert-scale values in relation to other such values across presented and published studies transition these into symbols for researchers—symbols, that is, of their myriad and passionate strivings toward a comprehensive and empirically substantiated vision of humanity. Specifically, the psychological construct to which respondents' numerical ratings point (as a tour guide points to a monument) gets entered into statistical relations with other constructs researchers similarly assess. These, then, get documented in professional presentations and publications. If received favorably, and if the work continues to be productive, presentations and publications increase in number. Collaborations follow. Colleagues cite the body of work and begin taking up the "established" methods for their purposes. Chapters and talks are invited; books ensue,

and possibly media appearances. Each of these activities, and hundreds more that never see the light of day, express researchers' passionate striving to bring to fruition a project they have accepted as their personal duty to a comprehensive conception of reality (e.g., Comte, 1830/1988, Mill, 1843/2009). These activities are laid down by researchers in records of accomplishments that only they know intimately as not just ink and paper, but as symbols of their life's work, symbols that cohere their myriad and extended labors to honor a vision of reality that deserves accrediting by all.

Yet, and as already suggested, the course of life taken by the social psychologist—literally, his or her curriculum vitae—is directed toward serving a framework which respondents may not share or, in fact, know anything of. It is a symbol to the psychologist's mind, not to respondents. To them, the construct their numerical responses contribute to is, at best, a token of their lives; and it is just *their* lives that get overshadowed by the service the psychologist pays to his or her own framework. By no means is this intended to say that social psychologists are unique for advocating and advancing their field's outlook through their research, nor that they are wrong to experience personal satisfaction in doing so. But among academic disciplines, they may be uniquely prone to forget this is the part they play because of their objectivist ideals. They may also be uniquely dangerous because of this. As Polanyi (1963) says regarding psychology and the social sciences, “[o]nly the blessed inconsistency of its expositors prevents them from rendering man, and all the sufferings and works of man, quite meaningless” (11). Below we press this conclusion further by showing how psychologists' models of others' minds, grounded in pseudo-substitutions, are sustained by a peculiar faith in the interchangeability of word-meanings and numerical operations.

### Holding Words and Numbers Together

An important feature of social psychologists' interpretative scheme manifests in the assumption that the words included on Likert-scales have vastly more in common with numbers than they actually do in the eyes of respondents. How is it that numbers and words come to be interchangeable for psychologists such that their respective meanings have so intimate a relationship that arithmetic operations can be performed on the former while focally not attending to the latter? Answering this question requires us to turn to a classic paper by S.S. Stevens (1946) whose taxonomy of scales of measurement is taught to virtually all students desirous of becoming psychologists. His explanation for how numbers get assigned to objects in research, including the words and phrases of Likert-scale instruments, needs special attention.

“Scales are possible in the first place,” Stevens (1946) says, “only because there is a certain isomorphism between what we can do with the aspects of objects and the properties of the numeral series” (677). We can, for instance, order runners just as we can order numbers, and we can find the middle-ranked runner just as we can locate the median of a group of numbers. It is such “isomorphism between ... the numeral series and certain empirical operations which we perform with objects [that] permits the use of the series as a *model* to represent aspects of the empirical world” (677). Yet even though we can order both runners and numbers, it seems insensible to apply an average to ranks because the “empirical operations” we followed do not ensure equal intervals between the runners. Taking the average of 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> is akin to trying to average “Gold,” “Silver,” and “Bronze” or “Best,” “Better,” and “Good.” Although reflecting our graded respect for different achievements, these indicators, whether numerical or verbal, do nothing more than flag runners' positions; they convey no *quantitative* information beyond this. Appreciating this reveals that it is important to know how a 1, 2, and 3 were assigned to a set of observations in order to judge whether averaging is a fitting operation to apply.

Knowledge of “the various rules for the assignment of numerals” (677) to the objects of interest, therefore, stand for Stevens (1946) as a kind of prerequisite to modeling observations with numbers. We saw above, however, that the indeterminant meaning of words and the precise selection of numbers to endorse or dissent from scale statements is resolved by an unspecifiable act of personal discernment—a “6” *feels* more satisfying to the respondent than a “5” or “7” for reasons they cannot say, in the same way that they cannot, as Polanyi observes, tell how they ride a bicycle or recognize their apple among twenty others at the grocer (*PK*, 88). The rule they follow, if indeed it can be called such, is unformalizable. Accordingly, Stevens (1946) teaches, the mathematical operations applicable to the Likert-scale cannot be determined! This problem, however, is overcome when the researcher *assumes* Likert-ratings follow an interval scale of measurement—i.e., one in which intervals of equal magnitude exist between adjacent numbers. This assumption is well known to the point of being ignored among psychologists, but Polanyi’s thought reveals that in making it the researcher is, in fact, overshadowing the individual’s personal contribution with his or her own judgment that the assumption is warranted, inconsequential, pragmatic or the like. Stevens, in fact, licenses exactly this move when he effectively announces, “Let us proceed anyway.”

In the strictest propriety the ordinary statistics involving means and standard deviations ought not to be used with these scales, for these statistics imply a knowledge of something more than the relative rank-order of data. On the other hand, for this ‘illegal’ statisticizing there can be invoked a kind of pragmatic sanction: In numerous instances *it leads to fruitful results* (1946, 679; emphasis added).

Complicating the matter further, consider that the prerequisite that appears so essential in Stevens’ (1946) taxonomy of measurement (i.e., knowing what rules were followed in assigning numbers to observations), rather than be gotten around by a “pragmatic sanction,” can, according to at least some statisticians, be utterly ignored so far as the math is concerned. As Lord (1953) so powerfully put it, “the numbers don’t remember where they came from, they always behave the same way, regardless [of any rule connecting them to observations]” (751). A dataset could be organized containing hundreds of numerical responses to survey questions. Were the questionnaires burned, destroying all knowledge of the statements that elicited these responses, we could still perform whatever statistical operation we wished, just as we could proceed to speak in ordinary conversation without any concern for the computation of statistics. When the respondent indicates “4: Modestly agree” on a Likert-scale, for instance, he or she is employing the quantity as a word-proxy like shrugging the shoulders with upturned hands, not as a number, nor as an affirmation of the arithmetic operations that could be performed on the number.

In fact, the number could be taken or left by the respondent and, in many instances, his or her communication would not be the least impaired; but even where the number offers aid, as in the pain scale referenced earlier, it does so as a supporting clue to a graded experience that is hard to put into words, not for any superiority it has *as a number* for representing the respondent’s meaning. The researcher, however, grants this superiority for the purpose of statistical modeling. Numbers permit of aggregation and the display of patterns that serve the generalizing aims of social science. Because words and numbers qua word-proxies are stubborn for this purpose, their meanings are kept in mind during data analysis much as errands as we go about our day: “back there,” so to speak, but hardly pressing for attention. When analysis is complete and the words’ and word-proxies’ meanings are focally recollected, they stand even further from where they originally did with respondents. They have been shaped by operations domestic to the researcher’s framework,

but foreign to and largely disregarding of respondents' own. And noting this, we may feel compelled to extend Polanyi's assessment of "the behaviorist vocabulary of learning, intelligence, etc." to social psychologists' vocabulary of statistically modeled psychological constructs: It "would be unintelligible to us but for our convivial understanding of the [persons] under observation. It is a mere pseudo-substitution, which relies for its meaning entirely on our familiarity with the conceptions it is trying to replace" (372).

Still, and again, what holds together numbers and meanings for the researcher, or on what is the "certain isomorphism" that Stevens (1946) speaks of based? Above we said it was grounded in an assumption adopted according to the researcher's personal judgment, but now its truer nature can be stated. Its basis remains a judgment, yes, but a judgment that reflects the researcher's desire to act on the intuition that word-meanings and numbers are more alike than not because doing so licenses the treatment of indeterminate phenomena as though they were abundantly clear. As Howell (2013) says in his widely used and multi-edition textbook on the use of statistics in psychological research: "[O]ur results are ultimately only the numbers we obtain and *our faith* in the relationship between those numbers and the underlying objects or events" (8; emphasis added). That belief holds word-meanings and numbers together for researchers answers the "vital question" raised in the previous section and clarifies with respect to psychology an important observation Polanyi makes about neurology. He observes that neurologists employ their powers of personal knowing to the fullest possible measure in research while denying the same to subjects whose minds and purposes they endeavor to apprehend (*PK*, 263). In psychology the situation is parallel. Psychologists' models reflect their surrender to Stevens' understanding of isomorphism and they attribute their models to subjects while never genuinely entering into the accounts subjects would give of themselves according to the frameworks that hold their allegiances. We see this clearly by taking the "tripartite structure" Polanyi ascribes to neurologists and adapting it to psychologists and their subjects (*PK*, 262):

I Mind (of psychologist)	II Model of relationships between quantities taken from subjects	III Cognitions, emotions, and motivations attributed by psychologist to subjects
I Mind (of subject)	II Subject's interpretative framework	III Self-ascribed cognitions, emotions, and motivations

Everything follows in social psychology from playing up the first component of this structure for psychologists and playing it down for subjects. Respecting individuals' powers of personal knowledge so far as it permits them to put down ratings on Likert-scales fosters the appearance of extending genuine respect to others' minds while never actually doing so. As Polanyi says, "to acknowledge someone as a sane person is to establish a reciprocal relationship with him," and "[t]his manner of knowing a person qualifies him fully for the functions of a mind in position I of a tripartite system controlled by a mind" (*PK*, 263). How would following Polanyi change the situation in social psychology? Answering this question requires us to appreciate the following lesson: "[A]s we rise stage by stage from morphology to animal psychology, our convivial participation in the living organism becomes increasingly richer, more intimate and less unequal. So, arriving finally at the study of human thought, conviviality becomes mutual" (*PK*, 379). In such mutual relationship, "the logical category of an observer facing an object placed on a lower logical level becomes altogether inapplicable. The I-It situation has been gradually transformed into an I-Thou relation" (*PK*, 346).

Here Polanyi has in mind persons “on an equal footing” (*PK*, 375) holding themselves and each other accountable to common standards of judgment, without which no fertile exchange of ideas could unfold. Two scientists debating the strengths of a new theory or artists discussing the tradition of surrealism are examples of this. Polanyi refers to such relationships as encounters, and they may issue in partnerships or, in the case of disagreement, rivalries of perspective (*PK*, 327), but conviviality nevertheless prevails so long as discussants remain mutually aligned to the same framework as the terms of any dispute. When terms are not shared, the possibility of a “responsible encounter” (*PK*, 378) diminishes, if it does not vanish entirely. This situation is particularly interesting because it sets us on the path to reimagining social psychology in a Polanyian fashion. Here we are confronted with the possibility of two modes of an I-Thou relation, that of master-to-pupil mentoring and that of pupil-to-master apprenticing, both of which have as their goal the fostering of conviviality where it is either nascent or absent. Properly understood within Polanyi’s framework, then, social psychology’s task becomes not the objective and rational mapping of empirical relations conducive to predicting and controlling human behavior—the essence of a behaviorism that today’s psychology has supposedly gotten beyond (see Skinner, 1971)—but the liberal education of others and of oneself into a culture’s social lore for the sake of discovery and responsible navigation of life’s exigencies. This admittedly radical alteration of perspective will be taken up in a future essay for further consideration.

### Conclusion

This paper has investigated the contribution Polanyi’s philosophy makes to our understanding of social psychology. Likert-scale assessments were taken as a special object of inquiry for their prominence in the field as an expression of objectivism in the study of persons’ attitudes and as a rather *prima facie* departure from the full-fledged respect Polanyi pays to other minds. The paper was not a demonstration of this departure so much as an investigation into *how*, using Polanyi’s insights, this departure manifests, and then as a clear justification for why one committed to his position may decline to participate in the enterprise and look for an alternative. Through this investigation we witnessed how the division that exists (and is even introduced) between respondent and researcher by Likert-scales constitutes a pseudo-substitution of numbers for words whose indeterminate meaning can only be resolved or made to mean anything whatsoever by a person. We saw too how these scales culminate in different experiences for respondents and researchers. In the latter case, they coalesce into symbols of researchers’ service to a framework that a-critically embraces the “isomorphism” between numbers and word-meanings and overshadows respondents’ place in their own tripartite structure of mind-to-self-ascribed purposes, meanings, etc. Taken as a whole, then, this inquiry recommends the following summary appraisal of Likert-scales in social psychological research. *They are pseudo-substitutions contributive to symbols for researchers of an interpretative framework that eclipses others’ powers of personal knowing and, in so doing, transmutes a meeting between potential or actual equals into what essentially is an I-It observation.* For the reader accustomed to Polanyi’s thought, the author wishes to affirm this as a responsible application of his philosophy to the subject at hand, one informed not just by the preceding inquiry, but by a nearly 20-year career in psychology, first as a student, then as a professional who created and used Likert-scales in research. For readers unaccustomed to Polanyi’s perspective, who perhaps hold an allegiance to social psychology and may, in consequence, judge the foregoing to be “biased, abstract and selective to the point of caricature,” the author wishes to affirm something different that may inspire deeper appreciation of the word “responsible” in the last sentence—namely, that even a so-called “biased” account can be “true ... illustrative, and ... revealing” when it is made in submission to standards believed

to be universal (Koch, 1999b, 128). The author claims this for the present essay, and he does so with the conviction that nothing better can be offered by others in relation to their work, including psychologists in relation to their own, however “objective” that work may be in appearance.

## ENDNOTES

<sup>1</sup>The author sincerely thanks Jon Fennell, Phil Mullins, and Meghan Barnes for their valuable feedback on an earlier draft of this paper.

<sup>2</sup>Interesting in light of the observations that follow is the fact that Likert (1932) did not present to his respondents the numerical values he later used for statistical analysis, only the verbal labels. The quantitative representations, thus, never even had the opportunity to enter his respondents’ subsidiary awareness.

<sup>3</sup>This paper endeavors to address Likert-scale assessment in a way that permits the broadest possible application, so it does not dwell on any single measure for very long. Should readers wish to see an extended treatment of a social psychological measure from Polanyi’s perspective, they are directed to one of the author’s earlier essays (Barnes, 2020). However, they should note that this earlier essay did not delve as deeply into Polanyi’s philosophy as the present piece.

<sup>4</sup>This refers to the sample variance:  $s^2 = \frac{\sum(x-\bar{x})^2}{N-1}$

<sup>5</sup>See also Polanyi’s critique of objectivists’ appeal to “fruitfulness” as a desirable attribute of scientific theories (*PK*, 147).

<sup>6</sup>See also Polanyi (1967) for a related discussion of how subsidiary and focal awareness operate when we “create” (301; author’s emphasis) meaning through speech and recognize meaning in others’ communications.

<sup>7</sup>Two questions about this portrayal arise in view of Polanyi and Prosch’s remarks about indication and symbolization. First, if indications “integrate ... clues into entities that seem to be projected away from the self as center” (*M*, 74), is the term applicable to itemized Likert-scale responding where the *self*’s attitudes are the object of interest? Second, Polanyi and Prosch say that experiencing an object as a symbol “is a wholistic imaginative achievement of meaning, not a serialized mechanical one” in which “being carried away” comes after surrendering (*M*, 73). How is it, then, that serialized responding can culminate in the proto-symbol of a token without being mechanical? Regarding the first question, if we conceive of each scale item as an instrument indwelt by the respondent for probing his or her experience, there is a psychological distance between the self as observer (*I*) and the self as known (*Me*) that is reconcilable to Polanyi’s claim: the self as observer remains the center from which the items are taken up to explore the self as known (see James, 2001/1892). With respect to the second question, there is no alternative to presenting the statements of a Likert-scale survey except serially, and one cannot bar the possibility that the cumulative impression the items leave may be distinct from their individual impressions. This can be so without changing the fact that surrender and “being carried away” manifest together as an “achievement” of imagination (*M*, 73).

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