Chapter 3
A Place for Persons: The Formal Systems of Smedslund and Ossorio

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> [What is the number one? What does the symbol 1 mean? …] Questions like these catch even mathematicians, or most of them, unprepared with any satisfactory answer. Yet is it not a scandal that our science should be so unclear about the first and foremost among its objects, and one which is apparently so simple? … If a concept fundamental to a mighty science gives rise to difficulties, then it is surely an imperative task to investigate it more closely until those difficulties are overcome. (Frege 1884/1980, p. ii)

What is a person? What is behavior? *Pace* Frege, we may note that questions like these catch psychologists, or most of us, unprepared with any satisfactory answers. On the whole, the inability to answer these fundamental questions about our subject matter has not been a matter of concern. It has been enough to claim that persons and behavior are what we study. In contrast, for Jan Smedslund and Peter G. Ossorio, it was imperative to give scientifically viable answers.

Because of the chilly reception their work often received, both men valued the mutual respect they shared. In 1983, when Smedslund was beginning to formulate his thoughts about a psycho-logic, he invited Ossorio to do a presentation at the University of Oslo (Smedslund 2013, pp. 86–87). He later acknowledged Ossorio not only as one of the people he had "profited from reading" (Smedslund 1988a, p. *vii*), but also as one of the people whose sympathy enabled him to persevere in the years until his initial version of Psycho-logic was completed (Smedslund 2013, p. 89). Ossorio (1991) recognized Smedslund's achievement, writing, "I am pretty well in complete sympathy with Smedslund's basic position, and I believe his program is valuable and viable" (p. 354).

In the literature, their names have been linked in connection with "common sense accounts of human action" (Shotter and Burton 1983, p. 272); "the non-empirical quality of much social psychological research" (Davis 1995, p. *xiii*); "constructionist inquiry … directed to the axioms or fundamental propositions underlying descriptions of persons in present-day society" (Gergen 1985, p. 5); "attempts to locate basic suppositions that underlie cultural (and scientific) knowledge about the mind" (Gergen 1987, p. 121); and the "implicit recognition of the

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T. G. Lindstad et al. (eds.), *Respect for Thought*, Theory and History in the Human and Social Sciences, https://doi.org/10.1007/978-3-030-43066-5_3

causal networks associated with common terms" (Kelley 1992, p. 19). These descriptions reflect varying degrees of understanding—and misunderstanding—of what they were doing.

For this volume on Smedslund's legacy, I have been asked to write about similarities and differences in the systems they created, Psycho-logic (Smedslund 1988a, 1997, 2002) and the Person Concept (Ossorio 1966/1995, 1982/1998, 2006). In addition, I will place their systems in a wider, historical context in the hope of contributing to a greater understanding of their work. To keep the paper within reasonable limits, I will not be discussing applications of the systems. Psycho-logic has been used successfully in critiquing pseudo-empirical research (Smedslund 2002) and in formulating the bricoleur model for clinical practice (Smedslund 2012c). These applications are discussed by other authors in this volume. The Person Concept has also been used in a range of applications, summarized by Ossorio (1983b).

An additional note of clarification about Ossorio's work may be helpful. Ossorio designates his four-component conceptual system as the "Person Concept," and the social enterprise of using the Person Concept and related formulations as "Descriptive Psychology" (cf. Ossorio 1971/1978, p. xii and p. 15). Because I will be focusing on the conceptual system rather than its use, I will speak primarily of the Person Concept. The capitalization serves to distinguish Ossorio's formal system from the concept of a person we all share.

Methodology

Since antiquity, there have been prescriptions for how to invent and discover new truths ("the context of discovery"), how to justify them ("the context of justification"), and how to present them in a compelling way. For a substantive contribution to be taken seriously by the members of a scientific community, the methodological rules of that community must be followed. In the world of quantitative research, for example, a discovery will not be eligible for the status of "scientific" unless the appropriate experimental methods are used to confirm or refute it, and its probability is reported from a third-person point of view ("It has been shown at the .001 level…"). But what if a scientist is not discovering or justifying new truths? What if the task is presenting a concept that we have all mastered and use every day? How can that be accomplished?

The Axiomatic Method

One time-honored option is to use the axiomatic method. As David Hilbert, the mathematician who achieved the first rigorous axiomatization of Euclidean geometry, expressed it:

> The axiomatic method is now and for all time the instrument suited to the human mind and indispensable for every exact enquiry, whatever its field may be. It is logically unassailable, and at the same time, fruitful. It also preserves for the enquirer the most complete liberty of movement. To proceed axiomatically in this sense is simply to think with knowledge of what one is about. (cited in Kneale and Kneale 1962/2008, p. 684).

This was the method of choice for Smedslund in creating his system. He knew that it was held in "disrepute" by modern psychologists. Nonetheless, he hoped with the help of an analogy to geometry, they would see why it was well suited for his task (Smedslund 1978, pp. 11–13). Instead, the majority reacted strongly to the fact that he was treating his axioms as true in the absence of empirical data.

The battles that ensued over the methodological status of his axioms in some ways mirrored those that had been fought in the early twentieth century over the status of Hilbert's axioms. Were they timeless, eternal truths? Conventions of a particular time and place? Definitions in disguise? Articulations of formal relationships? (cf. Coffa 1991)

For Smedslund's axioms, Harré (1999) proposed using the Kantian terminology of "synthetic a priori" with a Wittgensteinian interpretation: if the axioms are negated, they are not false but senseless. In response to Harré, Smedslund tentatively accepted that suggestion: "The psychologic propositions may, perhaps, best be characterized in terms of traditional philosophical categories as *synthetic* (not analytic) and *a priori* (not empirical)" (1999, p. 124). He affirms in his autobiography that "axioms [are] impossible to deny because their negations do not make sense" (Smedslund 2013, p. 110).

Later, when Kukla's *Methods of Theoretical Psychology* was published, Smedslund resonated to his discussion of the "contingent a priori" and reassigned his axioms to that status. As Kukla (2001) notes, "the major historical contrast in the realm of the contingent a priori is between Kantian and Kuhnian presuppositions. The former are grounded, fundamental, universal, inborn, inflicted, and not revisable. The latter are ungrounded, specific, idiosyncratic, acquired, adopted, and revisable" (p. 225). Smedslund seems to have had the Kantian variety in mind when he made his status assignment.

Conceptual–Notational Devices

In delineating the Person Concept, Ossorio made different choices regarding methodology. Rather than putting forth propositions to be accepted as truths, Ossorio emphasized that he was *presenting a conceptual framework*, for which truth was not an issue.

To help students understand the idea of a conceptual framework, he sometimes used the analogy of a bookkeeping system. In a bookkeeping system for a business, the account sheets in a general ledger have columns such as "date," "item," "debit," "credit," and "balance." Each of these headings holds a place for facts about business transactions. Taken together, the headings organize the facts into a form useful

to a businessman. Historical facts that are entered into the ledger can be true or false (e.g., "Is it true that a Stradivarius sold in June for 2.5 million?"), but the form itself cannot be.

Accordingly, there are reminders throughout Ossorio's work that he is reminding, prescribing, instructing, etc., but he is not making true statements. In *"What Actually Happens,"* for example, he emphasizes: "The declarative sentences in the present paper should not be understood as statements, but rather as instructions or exhortations modeled on the lines of 'Notice this … aspect of the conceptual structure I am *presenting herewith*'." (1971/1978, p. 65). In *Meaning and Symbolism*, he writes: "In a preliminary way, let us note that in the absence of propositions there are neither hypotheses nor deductions nor implications" (1969/2010, p. 127). More polemically, he points out in *Persons*: "For concepts no questions of 'true' or 'false' can arise at all, since they are not statements. And because they are not statements, neither can they be derived from any premises… If a concept is *presented* in declarative sentences… that will, in the present account, be generally in the service of delineation rather than an impossible and quite irrelevant claim to Truth" (1966/1995, p. 235).

In lieu of making true statements, Ossorio used a small set of conceptual–notational devices—parametric analyses, calculational systems, paradigm case formulations, and definitions—as resources in formulating and presenting the Person Concept (Ossorio 1979/1981). The use of parametric analysis was familiar to most psychologists because of the Munsell color system, in which colors are distinguished on the basis of Hue, Saturation, and Brightness. These are the parameters of color, i.e., the ways in which one color, as such, can be the same as another color or different from it. Taken together, they constitute a parametric analysis, which can be expressed by the formula <C> = <H, S, B>.

In a parallel manner, a parametric analysis of behavior can be created by answering the question, i.e., "What are the ways in which one behavior, as such, can be the same as another behavior or different from it?" In the Person Concept, the resulting analysis involves eight parameters, presented in Table 3.1. The form of behavior codified in the analysis is identified as Intentional Action (IA), and its

Table 3.1 Parameters of Intentional Action

I	Identity	Whose behavior it is
W	Want	A wanted state of affairs (the "motivational" aspect of behavior)
K	Know	What distinctions are being acted upon (the "cognitive" aspect of behavior)
KH	Know how	The relevant learning history (the "competence" aspect of behavior)
P	Performance	The process that occurs (the "procedural" aspect of behavior)
A	Achievement	Whatever is different in the world by virtue of the occurrence of the behavior (the "outcome" aspect of behavior)
PC	Person characteristic	The person characteristics that the behavior is an expression of
S	Significance	What the person is doing by engaging in the performance (the "meaningful" and/or "ulterior" aspect of the behavior)

formula is <B> = <IA> = <I, W, K, KH, P, A, PC, S>. This formula is used as the initial element in another conceptual–notational device, a calculational system.

The idea of calculational systems dealing with non-mathematical content is not new. In the seventeenth century, Gottfried Leibniz (1646–1716) wrote that "Not all formulas signify quantity. We can conceive of an infinite number of ways of calculating" (quoted in Kneale and Kneale 1962/2008, p. 336). Over the centuries, Leibniz's work inspired others to experiment with calculational systems that had nothing to do with numbers or space. Smedslund (2012b), for example, characterizes his system as a calculus of common sense: "The axiomatic system of psychologic can also be characterized as an attempt to create a calculus from our common knowledge, instead of leaving it an unanalyzed collection or fragments. A calculus is a system allowing one to derive a large number of predictions from a small number of assumptions" (p. 660).

In the Person Concept, calculational systems follow a specific model, the "Element-Operation-Product" model. In this model, (a) when an Operation is performed on an Element, the result is a Product, and (b) whatever is a Product is also an Element (cf. Ossorio 2006, pp. 39–40). The Elements are not assumptions, however, and the Products are not predictions because calculational systems are used to generate forms or structures rather than truths.

In the calculational system for behavior, the Operations are Identity, Substitution, and Deletion, and the initial Element is the Intentional Action (IA) formula. When we perform the initial operation of Substitution, what we substitute is the IA formula, i.e., we use the IA formula as a partial specification of the value of a parameter in that formula. The Product that is generated is itself a parametric analysis, but one of greater complexity than the original. It may in turn be used as an Element or in specifying the value of a parameter. Canonical forms of description that result from Substitution operations are listed in Table 3.2.

When we perform the Deletion operation, either on the original IA formula or on a generated Product, we remove a parameter from consideration, creating a parametric analysis that is simpler than the Element that was used. By calculating recursively and reflexively with the formulas in this way, we can generate forms of whatever degree of complexity is needed for representing facts and possible facts about behavior.

Primary Concept

In delineating the concepts of person and behavior, a system-designer has a choice not only about what methodology to use, but also about which of the concepts to take as primary. If "person" is identified as primary, then behavior can be treated as what a person does. Alternatively, if "behavior" is taken as primary, then a person can be treated as an individual who does that (cf. Ossorio 2006, p. 69). Either approach works because the concepts are so closely connected.

Table 3.2 Calculational system for behavior

Element	Operation	Product
<I, W, K, KH, P, A, PC, S>	Substitution	<I, W, <B>, KH, P, A, PC, S> Cognizant Action formula
“	Substitution	<I, <B>, <B>, KH, P, A, PC, S> Deliberate Action formula
“	Substitution	<I, W, K, KH, P, <B>, PC, S> Social practice formula
“	Substitution	<I, W, K, KH, <B>, A, PC, S> Symbolic behavior formula Significance description
“	Deletion	<θ, W, K, KH, P, A, θ, θ> Agency description
“	Deletion	<θ, θ, K, KH, P, A, θ, θ> Activity description
“	Deletion	<θ, θ, θ, θ, P, A, θ, θ> Performance description
“	Deletion	<θ, θ, θ, θ, θ, A, θ, θ> Achievement description
“	Deletion	<θ, W, K, KH, P, θ, θ, θ> Performative description
“	Deletion	<θ, θ, K, θ, P, θ, θ, θ> <θ, θ, K, θ, θ, A, θ, θ> <θ, θ, K, θ, P, A, θ, θ> Stimulus-response descriptions
“	Identity	<I, W, K, KH, P, A, PC, S> Intentional Action

Person

In formulating Psycho-logic, Smedslund makes the primary identification that of “person.” He asks specifically, “What is a person *to another person*?,” using the phrase in italics to emphasize that “a person is nothing “in itself,” but always as seen by someone, including the person him/herself” (2012a, p. 297). His axioms are answers to that question, expressed in the form, “P takes it for granted that O…,” where P and O are both persons.

Fitting with his assignment of the axioms to the status of contingent a priori truths, there is a Kantian quality to his discussion of persons. In his *Critique of Pure Reason*, Kant (1781/1996) claimed that there are pure forms of intuition and understanding that are “in us prior to the perception of any object” (B41). All the objects of which we can have knowledge must conform to these a priori forms because without them, “no experience takes place” (A664/B692).

Similarly, Smedslund (2013) talks about his axioms as expressing “unavoidable inborn views of the characteristics of other persons” (p. 90). He emphasizes that they “do not originate *in* experiences of other persons, but determine *how* these other persons are experienced” (2012a, p. 300). In a more biological idiom, he

writes that "our basic conceptual framework regarding people … ultimately depends on genetically constituted characteristics of *Homo sapiens*" (2012a, p. 297).

The substantive content of his axioms is, nonetheless, independent of his belief about what is inborn and/or inherited. As he notes, "One could disregard the question of whether these [axioms] describe inherited characteristics of all members of the species *Homo sapiens*, or merely refer to what all members of this species must learn very early because of commonalities in the life conditions of all humans" (2012b, pp. 665–666).

In light of his formulation of "person," "behavior" is treated as what a person does. His Intentionality Axiom—"P takes it for granted that what O knows, thinks, feels, perceives, says, and does, is partly directed by what O wants."—deals explicitly with the cognitive and motivational aspects of human behavior and provides a framework for understanding the behavior of persons as we take it to be (Smedslund 2012a, p. 297).

Behavior

Instead of taking "person" as primary, Ossorio makes the opposite choice: he takes "behavior" as the primary concept and defines a "person" as an individual who does that. As we have seen, his formulation of behavior is given by a calculational system with the parametric analysis of Intentional Action as its initial Element.

His definition of a Person is "an individual whose history is, paradigmatically, a history of Deliberate Action in a dramaturgical pattern" (Ossorio 2006, p. 69). As shown in Table 3.2, Deliberate Action is one of the forms of behavior generated by use of the Substitution Operation. From the formula <B> = <DA> = <I, <B>, <B>, KH, P, A, PC, S>, we can see that in Deliberate Action, a person knows what he is doing (reflected in the Substitution of a Behavior formula as a partial specification of the Know parameter) and chooses to do it (reflected in the Substitution of a Behavior formula as a partial specification of the Want parameter).

The use of "paradigmatically" in the definition tells us that a Paradigm Case Formulation (PCF)—one of the conceptual–notational devices listed above—is implicitly involved. We need the logic of Paradigm Case Formulation because "what is conceptually necessary to being a person is not literally found universally in persons" (Ossorio 2006, p. 32). In infancy, we do not yet have a history of Deliberate Action. Moreover, throughout our lives there are times when we are exhausted, asleep, intoxicated, etc., and not engaging in Deliberate Action. The "paradigmatically" reminds us not to take the definition as a claim of empirical universality.

Notice, too, that the definition is in terms of a history. Although a poet may find "character isolated by a deed," in the Person Concept the size of the unit for conceptualizing a person is a life history. Thus, in addressing the question of similarities and differences among persons, Ossorio asks, "How can one life history, as such, be the same as another life history or different from it?"

He does not assume that persons are specimens of Homo sapiens. Instead, he introduces the following distinctions:

- A human being is an individual who is a person and a specimen of Homo sapiens.
- An alien being is an individual who is a person and has a biological embodiment other than that of Homo sapiens.
- A robot is an individual who is a person and has a non-biological embodiment.

Given that all the individuals who have been recognized so far by us as persons are human beings, why would Ossorio create placeholders for persons with alternative embodiments?

One reason is that the Person Concept is a system designed to provide formal access to all the facts and possible facts concerning persons and their behavior. If we do not have these alternative embodiments available conceptually as possibilities, we cannot establish them observationally as actualities. The "bookkeeping" therefore includes a placeholder for "Embodiment" as one of the ways that one life history can be the same as or different from another.

In addition to their formal significance, the subcategories had a pragmatic significance for Ossorio. Over the years, he was involved in a variety of artificial intelligence projects through his businesses (e.g., Ossorio and Kurtz 1989; Kurtz et al. 1990). The policy that guided those projects—"Don't treat people as defective computers; treat computers as defective people"—reflected the possibility of creating persons with non-biological embodiment. Moreover, in the years when he was working with scientists and engineers at NASA, there was genuine concern with the question, "If we encounter persons with an embodiment different from ours, how will we recognize them as persons?"

Universality

Formal systems are the products of particular individuals at particular times and places in history making particular design choices. How can their creators claim that their systems are applicable to other times and other places? On what basis does Smedslund say that the axioms of Psycho-logic are cross-cultural truths? On what grounds does Ossorio (1982/1983a) speak of his calculational system for behavior as a "universal formulation" (p. 14)?

Cross-Cultural Truths

Smedslund, challenged on these and related issues by reviewers (e.g., Valsiner 1985; Cushman 1991), formulated the problem in terms of two questions: (a) Is Psycho-logic translatable from English to other languages? (b) Is there consensus among native speakers of other languages that the axioms are true and valid?

In dealing with the question of translatability, Smedslund was drawn to Natural Semantic Metalanguage (NSM), which is made up of more than 60 "universal human concepts" identified on the basis of lexical analysis (Goddard and Wierzbicka 2014). These "semantic primitives"—concepts like "know," "think," "feel," "want," "say," "do"—are said to be present in the lexicons of all natural languages. Smedslund knew that NSM was controversial, but nonetheless decided to rewrite the axioms of Psycho-logic insofar as possible using the primitive concepts of NSM. In this way, he hoped to insure both their translatability and universality (cf. Smedslund 2012b, p. 660).

In dealing with the question of consensus, Smedslund conducted eight studies in which participants were asked to judge the validity or truth of his propositions, as well as to choose between alternative statements inferred from his propositions. Participants in the studies included native speakers of English, Norwegian, Urdu, Ewe, Arabic, Turkish, Tamil, and Vietnamese. Overall, the results showed extremely high consensus, ranging from 92% to 98% (cf. Smedslund 2002, pp. 64–67).

The Multilevel Structure of Behavior

In understanding Ossorio's approach to universality, making the distinction between two of the parameters of Intentional Action—Performance and Significance—is crucial. Performance is the concrete, easily observable, process aspect of behavior, and Significance is what the person is doing *by* engaging in that Performance. For example, if I practice cello *by* playing scales, "playing scales" is a partial specification of the value of the Performance parameter, and "practicing cello" is a partial specification of the Significance parameter of my behavior.

A given Performance can have more than one Significance. If we keep asking, "What is she doing *by* doing that?," we can generate a series of answers.

Q1. What is she doing?

A1. She's playing scales.

Q2. What is she doing by playing scales?

A2. She's practicing cello.

Q3. What is she doing by practicing cello?

A3. She's preparing for rehearsals.

Q4. What is she doing by preparing for rehearsals?

A4. She's preparing for a concert.

Q5. What is she doing by preparing for a concert?

A5. She's making a living.

Q6. What is she doing by doing that?

A6. She's living the life of a professional musician.

Q7. What is she doing by doing that?

A7. She's living the life of a Norwegian, and that's her way of doing it.

This sequence may be represented using the Symbolic Behavior formula, <B> = <I, W, K, KH, <B>, A, PC, S>, in which a Behavior formula is substituted as a partial specification of the Performance parameter. Behaviors higher in the question–answer sequence have as the value of their Performance parameter any or all of the Behaviors lower in the sequence. For example, if we ask, "How does she prepare for a concert?" (A4), the answer may be "by playing scales" (A1), "by practicing" (A2), "by preparing for rehearsals" (A3), or all three.

The Symbolic Behavior formula makes it easy to see human behavior as a multilevel phenomenon with a minimum of two levels involved, both of which are necessary for representing the facts about what a person is doing. In mainstream psychology, when we take it that the Performance is what the behavior *really* is and do not have a placeholder for its Significance, we create confusion because our bookkeeping is inadequate for the facts.

As Ossorio (1982/1983a) writes, "the Significance parameter provides an opportunity to represent the part-whole relation between a given, historically occurring behavior and the historical, societal, and cultural configurations within which it can and does take place… Since every human behavior is *essentially* the historical realization of cultural patterns, understanding the behavior requires a knowledge of what those patterns are and what part the individual behavior has in those patterns" (pp. 15–16).

The Person Concept therefore includes a variety of additional resources for representing cultural patterns. The Social Practice formula, <B> = <I, W, K, KH, P, <B>, PC, S>, in which a Behavior formula is substituted as a partial specification of the Achievement parameter, allows us to represent one behavior as the outcome of another, and to represent patterns involving the behavior of more than one person. When a finer level of detail is needed, Process Representations from the Reality component of the Person Concept are available (cf. Ossorio 1971/1978). For multicultural analysis, there is a parametric analysis of culture (cf. Ossorio 1982/1983a).

Rather than being universal by virtue of specifying truths accepted in every culture, the calculational system for behavior is universal in that it allows us to generate whatever forms we need to distinguish and characterize different behaviors, types of behavior, social practices, ways of living, etc. The specific content that is represented using the forms will depend on a particular culture's own concepts, and of course will vary across individuals, groups, and cultures.

Historical Context

Just as with any choice of behavior, the choices of Smedslund and Ossorio in designing their systems can be understood more fully by understanding the historical and cultural context within which those choices were made. We therefore turn our attention to the wider context in which Psycho-logic and the Person Concept were achieved. After a "slice of history" is presented in this section, connections to Smedslund and Ossorio are made in the next section.

Modern Logic

In the opening decades of the twentieth century, there was intense excitement—as well as intense conflict—about logic. It was not the simple, fixed forms of Aristotelian logic that generated the buzz, of course. It was the new symbolic logic of Gottlob Frege. In his 1879 pamphlet, *Begriffsschrift*, Frege had presented a conceptual–notational system in which it was possible to create forms of unprecedented complexity by calculating with logical symbols. In addition to presenting notational symbols, Frege stated nine simple axioms that governed their use. The use of axioms was not customary in logic, but Frege wanted his logic to be a deductive system like Euclid's, the standard for rigor for two millennia (cf. Kneale and Kneale 1962/2008, p. 530).

Like Euclid, Frege set forth his axioms as necessary truths, not requiring proof because they were clear and obvious, and then proved his propositions by logical deduction from the axioms. In a demand that went "beyond Euclid," Frege (1893/2013) required that *everything* involved be stated explicitly, including the rules of inference (p. vi). His ultimate goal was to prove that all the truths of arithmetic were "timeless truths" and could be derived from logic.

Independently of Frege, Alfred North Whitehead and Bertrand Russell had been working on a similar project, using a notational system invented by an Italian mathematician, Giuseppe Peano. Like Frege, they took Euclidean geometry as the model for their work, but their project was more ambitious. They wanted to demonstrate that all the truths of mathematics, not merely the truths of arithmetic, had their foundation in logic. In 1910, 1912, and 1913, Whitehead and Russell published their axiomatic system in the three-volume *Principia Mathematica*, their title an allusion to Newton's *Principia*.

For Frege, Whitehead and Russell, it was a given that logic was a tool for making deductive inferences. How could it be otherwise? But at the same time they were working out their rigorous, formal proofs, a different conception of logic was gaining traction—logic as a tool for the characterization of structure.

This new understanding was reflected in the work of David Hilbert, a German mathematician. In 1899, Hilbert published a monograph in which he gave an explicit, rigorous formulation of all the axioms of Euclid's geometry. In doing so, he

did not presuppose the meanings of concepts like "points," "lines," and "planes." In fact, he wrote to Frege that these words could be replaced by arbitrary symbols, as long as it was understood that he was *defining* the logical relations between them. The ordinary meanings of the terms were irrelevant in Hilbert's approach. What mattered were the relationships expressed in the logical structure created by the axioms, independent of the subject matter in question.

If an axiomatic system is approached in this way, then what are axioms? Are they still true statements? In response to that question, Jules Poincaré, a French mathematician, claimed that we had been fooled by axioms. They had the appearance of being true statements, but they were really operating as undercover definitions, giving meaning to the primitive terms in a geometric system. He created a new status, "definition in disguise," and assigned axioms to that status. In light of the status change—from "necessary truth" to "definition in disguise"—Poincaré (1905/2007) wrote:

> What, then, are we to think of the question: Is Euclidean geometry true? It has no meaning. We might as well ask if the metric system is true, and if the old weights and measures are false; if Cartesian co-ordinates are true and polar co-ordinates false. One geometry cannot be more true than another; it can only be more convenient. (p. 50)

Hilbert championed the new field of metamathematics, devoted to evaluating axiomatic systems. Instead of focusing on truth, metamathematicians asked questions like, "Is the system of axioms complete?" "Are the axioms consistent?" "Are the axioms independent?" Questions regarding the empirical interpretation of axioms and their representational adequacy were set aside for others to address.

Inspired or infuriated by ideas like these, mathematicians and logicians divided into the warring schools of "logicism" (with Frege, Whitehead, and Russell), "formalism" (with Hilbert and Poincaré), and "intuitionism" (with an emphasis on the intuitive nature of mathematics). When Einstein published his general theory of relativity in 1915, conflict between the groups intensified in light of Einstein's use of a non-Euclidean axiomatization of geometry.

Logical Positivists

When Ossorio was born in 1926 and Smedslund in 1929, the Berlin Circle and a closely related group, the Vienna Circle, were working to understand the revolutionary changes taking place in logic, mathematics, and physics. Contrary to the popular stereotype, the interest of these groups in the 1920s and early 1930s was not primarily in empiricism or verification. Their focus was on clarifying the concept of a priori knowledge (Friedman 1999, p. *xv*).

Hans Reichenbach (1920/1965), the leader of the Berlin Circle, appreciated Hilbert's formulation of axiom systems as pure conceptual structures, not connected with any particular empirical content. But for science, Reichenbach (1920/1965) argued, these pure systems must be "coordinated" to concrete, observable phenomena. "Axioms of coordination" must be specified to give meaning to the terms in a

formal structure and to create a framework in which genuinely empirical statements can be evaluated. Unlike a priori principles that are universal and "true for all times," coordinating principles are theory-relative and subject to change (1920/1965, p. 48).

Rudolf Carnap, a leader of the Vienna Circle, was initially part of the logistic school but later changed to a formalist approach. After the switch, Carnap treated scientific theories as interpreted axiomatic systems. For the fields of set theory, arithmetic, geometry, physics, and biology, he presented axiom systems written in symbolic logic, emphasizing that the axioms defined the pre-empirical, linguistic frameworks of the respective sciences (Carnap 1958). In his systems, he carefully distinguished between syntax, e.g., rules for the formation of expressions, and semantics, rules for the intended interpretation.

Participants in the Circles used symbolic logic in their discussions as well as in their writing and were almost passionate about its use. For example, Arne Naess, a Norwegian philosopher and member of the Vienna Circle in 1934 and 1935 wrote:

> Why did I use elementary symbolic logic when stating theorems and conceptual structures in *Interpretation and Preciseness*? I did it both for economy of expressions and beauty. Very early in life, I admired *Principia Mathematica* by Bertrand Russell and Alfred North Whitehead. The notation I adopted follows that of David Hilbert and Wilhelm Ackerman's beautiful textbook of symbolic logic (1950). It is a sheer joy to follow their proofs! (2005, p. *lxxi*)

Independently of these developments in Europe, an American psychologist, Clark L. Hull, was developing his own views on the use of logic in psychology. While he was teaching at Harvard in the summer of 1929, Hull had met Alfred North Whitehead, who introduced him not only to *Principia Mathematica* but also to Newton's *Principia* (Smith 1986, p. 165). Inspired by the way Newton had modeled his system on Euclidean geometry, Hull (1935, 1937) published two "miniature systems" that used the deductive method, one for the subject matter of rote learning and one for adaptive behavior. These mini-systems brought him into contact with members of the Vienna Circle, and Otto Neurath and Arne Naess (quoted above) encouraged him in his work. His magnum opus, *Principles of Behavior* (Hull 1943), with its opening chapter extolling the virtues of the axiomatic method, became "one of the most influential books in psychology's history" (Hergenhahn and Henley 2014, p. 414).

Ordinary Language Philosophers

Not everyone was enamored with symbolic logic—an "artificial" or "ideal" language. Ludwig Wittgenstein, who met with some of the members of the Vienna Circle in the 1920s, returned to Cambridge in 1927 and turned his attention to the everyday use of language, i.e., to the pragmatics of language rather than its syntax or semantics. To gain insight into the use of language, Wittgenstein recommended focusing on "language-games"—games like giving orders, telling a story, making a joke, guessing riddles, asking, thanking, cursing, greeting, and praying. He

encouraged keeping "the multiplicity of language-games in view" and understanding these language-games as part of a form of life (1958, §23–24).

Wittgenstein rejected a number of tenets of the logical positivists, including the idea that symbolic logic would help reveal the structure hidden beneath ordinary language. He wrote that "Nothing is concealed… Nothing is hidden… Everything lies open to view" (1958, §435 & §126). He also emphasized that ordinary language is not deficient in any way, not vague or misleading, and not in need of rewriting in logical form.

Wittgenstein's ideas, circulating in notes and manuscripts in the 1930s and 1940s, were inspirational for philosophers at Oxford as well as Cambridge. Gilbert Ryle (1949), in *The Concept of Mind*, focused on the ordinary use of psychological terms to show what was wrong with talking about the mind in the same way we talk about the body. J. L. Austin (1955), in *How to Do Things with Words*, emphasized that many utterances are the performance of actions, e.g., to say "I now pronounce you man and wife" is to perform a marriage under the right conditions. P. F. Strawson (1959), in a move away from Wittgenstein, sought "to lay bare the most general features of our conceptual structure" through an analysis of everyday language (p. 9).

Fritz Heider

Fritz Heider was an Austrian philosopher, psychologist, and free spirit. He had contact with the logical positivists in the 1920s and resonated to Carnap's formulation of conceptual explication as a scientific tool. In his *The Psychology of Interpersonal Relations*, Heider (1958) notes: "Carnap (1953) has referred to this task of redefining old concepts as the problem of explication; he points out that making more exact a concept that is used 'in a more or less vague way either in every-day language or in an earlier stage of scientific language' is often important in the development of science and mathematics" (p. 9). Heider developed his own notation "to explicate the conglomerate terms of everyday language," a notation with "some of the features of symbolic logic without pretending to be as exact and systematic" (1958, p. 299, p. 15). He also found the ideas of Gilbert Ryle "stimulating" (p. 12). From the various schools of thought of his time, including some not mentioned here, Heider created a unique synthesis for understanding interpersonal behavior.

Connections

Psycho-logic and the Person Concept are out of joint with mainstream empirical psychology, but fit in the wider historical context we have just sketched. Seeing the connections between these systems and the historical movements we have discussed—logicism, formalism, and ordinary language philosophy—may be a springboard for understanding.

Psycho-logic has a place in the logistic tradition, along with other truth-oriented axiomatic systems—Euclid's *Elements* (written in Greek), Spinoza's *Ethics* (Latin), Newton's *Principia* (English), Whitehead & Russell's *Principia Mathematica* (symbolic logic), and Hull's *Principles of Behavior* (English). This placement fits with the influence of both Arne Naess and Clark Hull on Smedslund's work. As he notes in his autobiography, "I suppose my earlier fascination with Hull's theory, and Arne Naess's thinking about interpretation and preciseness, played a role in this project that developed in total contrast to the surrounding psychology" (Smedslund 2013, p. 96). After he entered the University of Oslo in 1948, he learned symbolic logic from Naess and became "a great admirer" of Hull (pp. 14–15).

The Person Concept is closer to the formalist school. Notice that "formalism" here refers to the movement associated with Hilbert, in which conceptual structures are articulated by rigorous, logical symbolism, and the applicability of the formulation is a separate question. Smedslund, of course, sought to formalize common sense through his axiomatization. But he was not concerned with the distinction between form and content characteristic of the formalists. When Ossorio entered UCLA in 1946, many of his professors were émigrés to the United States who had fled from Europe after Hitler's rise to power. As an undergraduate he had classes in logic with Han Reichenbach, and as a graduate student with Rudolf Carnap. Although he strongly rejected Carnap's semantic approach to language, he appreciated Carnap's formalist systems and included them as "part of the intellectual history of the Person Concept" (Ossorio 1983b).

The strongest influences for Ossorio, however, were the ordinary language philosophers. By the time he received his degree in 1961, Ossorio had "discovered" Gilbert Ryle and P. F. Strawson and references both philosophers in his dissertation, *Meanings in Ordinary Language*. When he completed the initial formulation of the Person Concept in 1964, he wrote that he had been "stimulated by the writings of Wittgenstein (1958), Ryle (1949), Anscombe (1958), Strawson (1959), Gosling (1962), and Carnap (1958)" (Ossorio 1966/1995, p. 223). Smedslund does not seem to have been influenced directly by the ordinary language philosophers, but he was influenced indirectly through his long-time Wittgensteinian friend John Shotter (Smedslund 2012b, p. 298) and the philosopher–psychologist Rom Harré (1999).

Fritz Heider, who visited the University of Oslo in 1961, is identified by Smedslund as "the psychologist who most profoundly influenced my professional career" (2013, p. 37). Two of Smedslund's articles (1988b, 2008) reflect his deep respect for Heider and his work on psychological common sense.

What Things Are

There is much more that could be said about the two systems than space permits. For example, I have talked about the axioms of Psycho-logic, but said nothing about its definitions and corollaries (cf. Smedslund 1988a). Without these, it is not

possible to appreciate the differentiation or complexity of Smedslund's system. Likewise, I have touched upon only two of the four major components of the Person Concept—Behavior and Person—but said nothing about the Language and Reality components (cf. Ossorio 1971/1978, 1997). Without these, it is not possible to appreciate the comprehensiveness of the Person Concept.

I have also not mentioned Ossorio's status dynamic maxims, a set of almost one hundred warnings and reminders (Ossorio 1982/1998). The maxims call for comment because they have been mistaken for propositions or traditional axioms. Smedslund (2012b), for example, wrote: "The only other attempt that I know of at something like an axiomatic system in modern psychology, in addition to the well-known one created by Hull (1952), was made by Peter Ossorio (2006), who used the term 'maxims' for what I call axioms: that is, principles that we must take for granted" (p. 659). Describing the status dynamic maxims as "something like an axiomatic system" would have evoked a sharply raised eyebrow from Ossorio because it ignores his repeated reminders that he is not stating propositions (cf. Ossorio 1991, p. 355).

In light of the historical sketch above, we can note that stating truths is a highly respected "language-game." But there are many other language-games that have scientific value—games like giving warnings, offering reminders, presenting commentaries, and providing justification when an important failure in describing persons is at stake (cf. Ossorio 1998, pp. 4–5). The status dynamic maxims are better understood in the spirit of Wittgenstein's "reminders for a particular purpose" (1958, §127) than in the spirit of Frege's "timeless truths" (1893/2013).

Kenneth Gergen (1985, 1987), who described the work of both Smedslund and Ossorio as directed at "fundamental propositions" and "basic suppositions," also overlooked Ossorio's explanation of what he was doing. Smedslund created his system in the time-honored Euclidean tradition of proving propositions from self-evident suppositions. Ossorio did not.

Harold Kelley (1992), of course, misrepresented both systems when he claimed that Smedslund and Ossorio were "implicitly recognizing causal networks" (p. 19). The concept of intentionality and the distinction between causes and reasons, fundamental to both Psycho-logic and the Person Concept, were clearly not recognized by Kelley. (For an attempt to rescue Heider from a similar fate, see Malle and Ickes (2000). For discussions of causality, see Smedslund (2012a) and Ossorio (1973, 1978).

In response to these clarifications, challenges may be raised: "Why can't we just treat Psycho-logic as the implicit recognition of causal networks?" "Why can't we just treat Ossorio's maxims as timeless truths?" "Why can't we just treat Smedslund's axioms as warnings and reminders?" We can do these things, but we run the risk of violating the integrity of the systems as envisioned by their designers. I therefore leave the temptations (and satisfactions) of those kinds of redescriptions and revisions for others.

Conclusion

Jan Smedslund and Peter Ossorio shared an appreciation of the need for a conceptual system to delineate the basic concepts of behavioral science. They also had in common the fortitude to develop their systems, undeterred by the lack of understanding and hostile reactions of colleagues. Ossorio (1980) described his work as "a fundamental intellectual and technical gift … to those in various intellectual communities who grasp it" (p. 950). The same can be said of Smedslund's system. Their gifts have not always been well received, but for those who do appreciate them, they offer a compelling alternative to the widely accepted naturalistic, mechanistic, reductive approaches of mainstream behavioral science.

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