Intentionality: Or How to Buy a Loaf of Bread

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Abstract: *Parallels are drawn between the action-plans and basic-actions of intentionality advanced by Boden (1973) and the quantized factors of Q methodology. Concluding that intentions are complex is distinguished from making complexity itself the object of inquiry, and what this implies is made the basis of an experiment focused on the transitory thought in Boden's essay. Of the three operant factors which result, two correspond to Boden's own conclusions, but the third is suggestive of a greater complexity, as found in the quantum theory of Prigogine (1980). A second study reveals three feeling states relative to Boden's problem about shopping for a loaf of bread, indicating that intentionality extends from the simplest to the most complex of events. The conclusion is reached that the assumption of unity, present since the Middle Ages, must give way to complementarity and multiple intentionalities.*

Introduction

A paper by Margaret A. Boden, "The Structure of Intentions" (Boden, 1973), is a masterly exposition of intentionality from a psychological standpoint, using buying a loaf of bread to focus attention on the complexity of even this most mundane of tasks. In Q methodology, factors are not only subject to quantum complementarity, but are intentional, pointing the way to possible courses of action (Stephenson, 1986a, 1986b). In *Quiddity College: Thomas Jefferson's Legacy* (Stephenson, 1970/1980), intentionality is the ultimate purpose of a youth's education. Clearly, the concept of intentionality has to have careful scrutiny.

Margaret Boden accepts "intention" as proper to scientific psychology, as a matter of everyday phenomenology. Most of us, at one time or another, have intended to buy a loaf of bread. Psychologists, however, are not of one mind about the concept. As Boden observes, Heider (1958), following gestalt psychology, represents intentions as forces in a person's life-space, as vectors pushing the person in a linear direction (Heider, pp. 82–112). This, Boden objects, hides the fact that intentions have detailed inner structures, and they cannot be understood without taking this *complexity* into account

Operant Subjectivity, 2006 (April/July), 29 (3/4): 122–137; Reprinted from Operant Subjectivity, 16(3/4): 69–90.

(Boden, p. 23). The *complexity* as such seemed to strike her as highly significant.

Boden's essay was written before physicist Ilya Prigogine (1980) developed his new physics on the postulate of complexity. Prigogine required two concepts to further his thesis (apart from knowledge, of course, of thermodynamics and of Boltzman's law and the like)—a concept of *time* that is irreversible, and a concept of physics that is integrative and not merely disintegrative. The former (*time*) is complex, as I have indicated elsewhere (Stephenson, 1988a). With respect to integration, Prigogine defines biological space, giving as an example the development of an embryo chicken, in which

> . . . every event proceeds at a moment and is a region that makes it possible for the process to be coordinated as a whole. This space is functional . . . the events are processes localized in space and time and [are] not merely [geometrical] trajectories (Prigogine, 1980, p. xiv).

Margaret Boden also qualified complexity with two constructs, *action-plan* and *basic-action*. The one could well be comparable to Prigogine's *Being*, and the other to his *Becoming*. Moreover, *action-plan* looks very like the meaning of intentionality attached to quantized factors in Q methodology. *Basic-action,* however, is neurological and physical in Boden's thesis, and thus is outside Q-methodological purview.

Problems are therefore set: how close was Margaret Boden to quantum theory, whether of Niels Bohr or Ilya Prigogine; and what exactly is the status of intentionality in quantum theory?

Boden's Psychological Analysis

Boden's method was a conceptual analysis of human behavior in terms of the general psychology of her time (prior to 1970). The *Journal for the Theory of Social Behavior*, in which Boden's article appeared, welcomed "discussion of theory and method in light of the philosophy of science" (Editorial Note, vol 3, 1973).

We begin with Boden's approach to the problems of intentionality, with reference to her example of an intention to buy a loaf of bread. This, ordinarily, results in an act of purchasing it, a functional approach, where the intention is a schema controlling the execution of the purchase (Boden, 1973, p. 24).

It gives rise to Boden's concept of an *action-plan*, within which both the goal or purpose, the intention, and the end-state of the intention have to be represented. What kind of loaf, and why? Fresh, old, one-pound, wholemeal, white? To feed ducks? Or to make cucumber sandwiches for Lady Bracknell at tea? There is conscious or unconscious problem-solving, guided by the subject's preferences and beliefs. A number of alternative procedures may be involved, as contingencies—if one baker is closed, which next? And to quote:

> Thus the plan for the act of buying a load may include sub-plans for walking to the bakehouse, opening the door, greeting the baker, taking the bread, handing over the money. The series is temporally ordered, at least in part (Boden, 1973, p. 25).

Strategies and tactics are at issue. Translation from strategy to tactics may reveal unsuspected snags requiring a complete revision of the action-plan: all the bake-shops are closed for the day—what then?

There are also considerations vis-à-vis interpersonal relations. Is the bread for Holy Communion? Or for cucumber sandwiches? How to treat the bread in such cases?

Also abductory possibilities: a whole list of general rules, such as "if you are short of money, borrow some from a friend," or "in a difficulty, try a plan that worked on a previous occasion."

All such, we are reminded by Boden, can be regarded as stored *information*, available to the subject independent of specific intentions—cognitive, rather than motivational (creative). "But they contribute to the inner structure of every intention," providing rules for selecting and forming *action-plans*. Not all these forms of knowledge will be consciously expressed, or are even expressible, and crucial aspects of intention may be hidden to introspection (p. 27). She concludes, even so:

> unless an intention is thought of as an action-plan that can draw upon background knowledge and utilize it in the guidance of behavior one cannot understand how intentions function in real life (pp. 27–28).

Deeper Purposes

However, she also acknowledges that deeper purposes (as distinct from more and more of the same common-sensical catalogue) come into intentionality. The concern is now with underlying motives, instincts, needs, drives and the like. Hunger is clearly related to a demand for food. Boden therefore elaborates: suppose there are six men in a line waiting to buy bread—what motivated them? The first, indeed, may have been hungry, "licking his lips, and rubbing his stomach," he may eat the loaf immediately. The road from food-seeking to intention is short and uncomplicated in such a case.

The second man, however, has a secret purpose: there is a starving and beautiful girl around the corner, and he buys the loaf with "a lascivious smirk," giving it to the girl. It is scarcely acceptable that hunger motivated him. Instead, it is an example of over-determinations, as in Freud's doctrine.

The third man buys 50 loaves, installs himself in a local exhibition hall, and proceeds to "munch" his way through the pile until vomiting intervenes. Obsessive hunger? There are 20 different possibilities in the event—was he being exploited by a showman? In any case, hunger alone is unlikely to explain his behavior: competitiveness and self-display may be involved, and "not all psychologists would be prepared to list these qualities as basic motives."

The fourth man takes his loaf to church as an offering for harvest festival. It is a "religious" motivation, but Boden asks, "how is such motivation to be analyzed?" (p. 31). Some psychologists give religious behavior a specific religious instinct, comparable to hunger drives (Darwin, 1872; Starbuck, 1899). Others deny this. Freud (1928) attributed religion primarily to the Oedipus complex. William McDougall (1908) provided religion with four instincts, curiosity, submission, flight, and parental care.

The fifth man has a commercial interest, buying loaves to sell later at a profit. This, surely, involves a complex connection between needs—to make a livelihood, to achieve success, etc.

One man remained, and he cut his loaf into small cubes which he "lays in a beeline to the royal palace," where the King, as promised, duly grants him a princess' hand in marriage. A fairy-tale. But Boden uses it to emphasize that it is impossible to rule out any "dynamic base" for human intentions.

Thus, in terms of action-plans, the notion that deeper motivation solves problems is false" "there is not even a reliable correlation between action-plans and dynamic base" is Boden's conclusion. Complexity runs riot there too.

Current Psychology (1970)

Writing before 1973, Margaret Boden represents traditional psychology, from William James to William McDougall and Freud, including cybernetics and information theory. The concept of *image* was much discussed, as intervening between action-plan and behavior. (Miller, Galanter, & Pribram [1960], to which she makes reference, is a case in point, but *International Behavior: A Social-Psychological Analysis*, edited by H.C. Kelman [1965], has hundreds of references to "images" from leading social psychologists of the decade.) Since "image" is presumably a thought process, psychology could be expected to explain how an intention arises in a person's mind: unfortunately there is no reference to *intention* in any psychological texts with which she or I could have made contact. Boden was therefore left with neurophysiology to explain how bodily actions carry out an intention. She quotes William James that the translation from mental to bodily action depends upon "a subjective phenomenon," which we can "translate into no simpler terms" (James, 1981, vol. 2, p. 569). The bodily actions involved in the intention to receive Holy Communion, for example, involve moving up to the altar, swallowing the bread, but also what the ritual means to the worshipper, conceived as "symbolic operations of primary process thinking" (according to Boden) such as Freud proposes as intrinsic to the ritual.But, Boden concludes, insurmountable problems are presented about the basic thought processes in the situation (Boden, p. 38).

Physical activity also enters. In raising an arm, where is the intention? Boden is prepared to admit the possibility of *basic physical actions*: a man lifts a loaf of bread from the baker's breadbasket, but this wasn't because it

caused the arm to lift. Arm-raising is available for a hundred different situations. But what are the *basic actions* in buying a loaf of bread? Opening the baker's door? Walking to the shop? Boden refers us to Lashley's (1951) classic discussion of the physiological mechanism underlying motor skills, for which he posits a physiological schema of a hierarchical type, i.e., a highly structured schema controlling the apparently simple action of raising one's arm. (And the hand, with its marvels of finger movements, is surely bewilderingly structured, with probably two-thirds of the brain involved—witness the brilliant pianist!)

It is a relatively straightforward matter in cybernetics and information theory to represent buying a loaf of bread along data-processing lines of memory storage, retrieval, feedback, and the like. This, according to Boden, helps in the development of "programming science." In any case, the physiological and neurological nature of intention is as complex as all else.

In conclusion, for Boden, every intention, of even as small an event as intending to buy a loaf of bread, has a motivational, a procedural, a physical-bodily aspect. Any satisfactory theory of intention must recognize and explain the inner structure, in thought, and in overt behavior (Boden, p. 44). There are 25 closely argued pages of analysis in Boden's essay, of which I have only skimmed the surface: It is abundantly clear that *complexity* is the natural order of things in intentionality!

Quantum Theoretical Connections

Mention was made earlier that complexity is an important concept in the new physics of Ilya Prigogine in his *From Being to Becoming: Time and Complexity in the Physical Sciences* (1980), in which *irreversibility of time* and *integration* are key constructs. We asked how near Boden had got to such concepts in her analysis of intentionality, and one would proceed to qualify the matter by analysis of the kind she pursued. However, is there an objective way to reach a conclusion? Prigogine began with complexity and abstracted *time* and *integration* in terms of thermodynamics. Boden, instead, abstracted *action-plan* and *basic-action* by reasoned analysis. What does quantum theory provide?

Anyone familiar with Q methodology would be able to say that much of Margaret Boden's analysis falls far short of what we can do about her problem. Her constructs, of *action-plan* and *basic-action*, are categorical, and not necessarily what is intrinsic to her phenomenon. On the other hand, *action-plan* has the look of *operant factor* about it—except that in Q methodology intentionality is an observed effect, not an *a priori* assumption: every factor in Q is indicative if an intention (Stephenson, 1986a, 1986b). *Basic-action*, however, is neurophysiological, and outside Q's purview.

There is a remarkable switch in thought between concluding that intentions are extraordinarily complex, as Boden has done, and asking for the complexity itself to be understood and to be made the object of one's science.

It is the latter that Q methodology attempts.

It is this that Boden missed. From a Q-methodological standpoint, her essay is essentially her transitory thought about intentions. Indeed, it was because her essay was so rich in this respect that it was kept on my bookshelf, to use one day to show what could be done with it along quantum-theoretical lines. Transitory thought is creative thought in formation (Stephenson (1986a, 1986b).

The procedure is straightforward. First, Boden's essay can be reduced to a *concourse*, representing the complexity of a psychological event (PE), namely, her essay.

Second, we can treat Boden as we did the woman whose house was on fire and who called "Save my dog!" (Stephenson, 1988a). Boden has spoken, voluminously, and we can resort to Q sorting to determine what was really on her mind.

An Experiment

A selection of self-referent statements was chosen from Boden's essay, typically as follows:

> Ideally, a psychological theory of intention should specify the basic bodily operations out of which effects may be built up (p. 36).
>
> Introspectively speaking, then, raising one's arm is an action performed "directly," without the need for an action-plan (p. 41).
>
> A priest's quest for bread intended for the Christian sacrament of the Eucharist would mention more complex processes of sublimation that would the explanation of St Teresa's language of religious ecstasy (p. 32).

All such are basically Boden's opinion. Inspection of the concourse so collected showed that the statements could be grouped categorically as shown in Table 1.

Table 1: Factorial design

	Levels		
Effect A	*(a) thought process*	*(b) theory*	*(c)bodily process*
	(d) religious process	*(e) intention*	*(f) misc*
Effect B	*(g) positive*	*(h) negative*	

There are 12 combinations (6x2) of effects A and B, one level at a time, making a Q sample with four replications easily available (n=48). All of Boden's thought is of positive valency, so we had to resort to changing some of her statements to negative, to provide for the homology postulate of Q technique, namely that Q samples have to balance about pleasure-unpleasure such that each Q sort gives zero (M = 0) for average state-of-feeling. The

result was a Q sample N = 42, balanced as required by omitting 6 statements and changing the valency of 10 others.

Seven Q sorts were performed and factored with myself as Q sorter. The possibility remains for anyone else, including Margaret Boden (if still alive—her name is not listed in the *List of Members* of the British Psychological Association of 1981), to repeat my experiment. The factor results are in Table 2.

Table 2: Factor data for Boden's transitory thought

Q sort		*Operant Factors*		
	Condition of Instruction	F_1	F_2	F_3
1.	Margaret Boden's position	**60**	35	20
2.	Quantum-theory position	-19	28	14
3.	Information-cybernetic position	**63**	-18	18
4.	Freudian position	23	**69**	37
5.	"Image" position of the 1960s	32	11	30
6.	Bodily position	**60**	-04	29
7.	Prigogine position	12	21	**85**

Note: significant loadings shown in bold

The data are in simple structure. Factor F_1 represents Boden's conclusions, embracing Q sorts 1, 3, 6 for her overall position (1), including information theory (3) and bodily action (6). Factor F_2 is for Freudian-type dynamism, and factor F_3 points to the complexity of Prigogine's position. Instead of one action-plan, there are three.

Two Q sorts are not in her system, for No. 5 ("Images") and No. 2 (quantum theory). The former engrossed leading social psychologists in the 1960s, but now seems to be forgotten. The other is Q methodology, and of course there is noting of it in Boden's essay.

The Achievement

We shall leave aside the interpretation of the factors, except to give the reminder that they are in complementarity relationships, and are indicative of intentionality (Stephenson 1988a, 1988b).

What has been achieved is a reduction of Boden's 25 pages of mainly transitory thought to Table 2, indicating that what Boden had "in mind" was not one, but three distinct action plans, represented by Factors F_1, F_2, F_3.

F_1 could well be the same, fundamentally, as Boden's action-plan. It includes Q sorts 1, 3, 6—representing complexity, the information science position, and *bodily action*, respectively. It does not include Miller, Galanter & Pribram's "Images" (Q sort 5 is not on any factor), and this corresponds to Boden's own conclusion.

Factor F_2 represents dynamism, and it is in Boden's system, as a separate aspect of the complexity of intentional behavior, although she denied such a link. For example, Boden says that since a babe-in-arms has neither an Oedipus complex nor knowledge of the names of effects of poisons, it can

scarcely generate an action plan to spread a lethal dose of arsenic on its father's toast! A satisfactory developmental theory might explain, however, how its elder brother might perpetuate such as act. Actually, F_2 has its own intentionality in that direction.

Factor F_3 is suggestive of Prigogine's greater complexity, "even more taxing," full of "fiendish subtleties," much of it "hidden from introspection," much "inexpressible"—pointing to Prigogine's indeterminateness rather than to Boden's classical determinism. It is antithetical to F_1 and F_2, and represents cognizance, on Boden's part, of the *extraordinary* complexity in social behavior, leading to language with which Prigogine's position could be represented—he influenced "process" philosophy and psychology in terms of precisely such complexity as at the very core of nature, whether of physics or psychology, of the atom or mind (Progogine, 1986). It appears here, in her system, as a separate intentionality.

The factors are in complementary relations: it means that they are separate aspects of what Boden was conceiving as action-plans, which cannot co-exist in substantive thought. She can accept F_1 or F_2 or F_3, but only one, and she chose F_1. It made sense because she needed to have *bodily-action* in her system and F_2 and F_3 scarcely could have helped in that direction.

But there is also the inherent *intentionalities* of these factors to consider. We all intend actions, and no doubt we allow for appropriate variation of means to achieve their ends, if, perchance, obstacles arise. I need a loaf of bread, but it is left aside until I go shopping, when I can include it. What Boden is dealing with is overt behavior, or thought to that effect, in all of its complexity. Ours, in Q and quantum theory, is a very different matter. Boden takes intention for granted, in common parlance. *We discover intentionality as quantum factors*. Every operant factor is a surfacing of intrinsic, *natural*, intentionality. That is, intrinsic to the given situation.

Thus, for Boden's situation (and it is that of present day general psychology, basking in some relief from behaviorism, in the glow of cognitive psychology, which is in essence Boden's factor F_1) there are *three*, not merely *one* kind of action-plan, each with its own contingent intentionality. These are not predictions, but merely statements of *possibilities*. There is no "hidden variable" to explain all three; the factors are not tested results of the reality functions in the Kantor formulation. They are *new* knowledge about "potentialities or possibilities," "tendencies, not actualities," promises," "nothing ever happening" (to use Heisenberg's words about the quantization phenomenon in physics). Each factor, F_1, F_2, F_3, has gained a feeling-state, with its intrinsic intentionality, in Margaret Boden's transitory thought. Thus F_1, duly pursued in its terms, could lead to an article such as Miller's, "Behaviorism and the New Science of Cognition" (1988). F_2 pursued to its possibilities, could lead to a work such as mine, "Falsification and Credulity for Psychoanalytic Doctrine" (Stephenson, 1988b). F_3, similarly, finds its possibilities in "process" philosophy and

psychology, as in Griffin's *Physics and the Ultimate Significance of Time* (1986.)

The Switch

Every reference in Boden's essay was common knowledge amongst academic psychologists of the 1960s, and none would doubt the complexity to which she called such detailed attention. Yet none, other than in Q methodology, asked for investigation *in terms of complexity as such.*

Already, as early as 1905, the advances being made by nuclear physics—at the discovery, for example, of radium by Henri Becqueral in 1895—had caught the imagination of many, including America's great historian, Henry Brooks Adams (1838–1918), who could write (in 1905) to a friend:

> The assumption of unity which was the mask of human thought in the middle ages has yielded very slowly to the proofs of complexity. The stupor of science before radium is a proof of it. Yet it is quite sure . . . that, at the accelerated rate of progression shown since 1600, it will not need another century to tip thought upside down. Law, in that case, would disappear as theory or *a priori* principle, and give place to force. Morality would become police. Explosives would reach cosmic violence. Disintegration would overcome integration.

The quotation is from Campbell's *The Masks of God: Creative Mythology* (1968, p. 620). Adams was aware of the stupor imposed on science in the past century, in comparison with the richness of the humanism of the Middle Ages, and therefore could make the switch (even though he was not a scientist) to modern (i.e., nuclear) physics. And he was surely remarkably prophetic. International law, as *a priori* principle, has been replaced by superpowers and by military dictatorships all around the globe. Morality is now imprisonment—so many years incarceration for such-and-such an evil, with millions of men (not women) in the USA, and USSR especially, subject to vast inhumanities. The bombing of Hiroshima and Nagasaki was of cosmic proportions. And if Marshall McLuhan's conclusion merits attention, as it does, all our institutions of family, church, college, law, business, military, are in process of disintegration, with nothing replacing them integratively. Henry Brooks Adams was accurate as well as prophetic: the mark of stupor is still deeply planted in present-day psychology, which remains Cartesian and Newtonian, going nowhere.

If Henry Brooks Adams could understand so much in 1905, why is it that psychology remains in stupor? Even today, in 1988, psychology has been unable to consider the investigation of complexity, as such.

Philosophy of science could have been of assistance. The only reference in Boden's essay is to von Neumann's contribution in *The World of Mathematics* (1956), which postulated determinism to account for the enormous complexity of the human nervous system: automations are given well-defined functional characteristics which are "assumed to react to certain

unambiguously defined stimuli, by certain unambiguously defined responses" (p. 2071). However, there are ample references to quantum theory in *The World of Mathematics,* in which von Neumann's article appears. Whitehead (1956) notes that it was for mathematics and physics to settle whether matrix algebra solves the problem of the "perplexing jumps" represented by quantum theory. Heisenberg, Born, and Jordan indeed did precisely that. The problem then became one for philosophers, and Whitehead tackled it:

> The discontinuous existence in space, thus assigned to electrons, is very unlike the continuous existence of material entities which we habitually assume as obvious. . . . Those electrons, with the correlative protons, are now conceived as being the fundamental entities out of which the material bodies of ordinary experience are composed. Accordingly, if this explanation is allowed, we have to revise all our notions of the ultimate character of material existence. For when we penetrate to those final entities, this startling discontinuity of spatial existence discloses itself (1956, p. 415).

There are also brief but adequate excerpts from Werner Heisenberg's "The Uncertainty Principle" (1956, p. 1051), the concern being with indeterminateness and also with Bohr's *concept of complementarity* (p. 1053).

For the latter, two cherished ideas have to be renounced—first, that natural phenomena obey exact laws (the principle of causality), and second, that we must explain all phenomena as relations between objects existing in space and time. When an experiment (at a nuclear level) involves *observation,* this introduces the indeterminateness of the concept of "observation"—it is not possible to decide, other than arbitrarily, what "are to be considered as part of the observed system and what as part of the observer's apparatus" (Heisenberg, 1956, p. 1054).

(In Q, it is impossible to separate the technique of Q sorting from the observed system: one part is the observer's apparatus for measurement, and the other is an aspect of the Q sorter's psychological event.)

In short, quantum theory was all around, in the literature to which Boden (as I) had access. Yet not a hint of its influence is present in her essay. The position is the same now, towards the close of the 20th century: psychology remains in what Henry Brooks Adams called a stupor of science, that of pre-Einsteinian thought, of determinism and causality law.

Concourse as Complexity

The abstraction had to be made, that *complexity* as such is different from the facts composing it. Without question there are thousands of facts that enter into the buying of a loaf of bread, and psychology has been busy substantiating them—and continues on this endless task even now. It is a different matter to ask about complexity, as such, how can it be investigated?

It is achieved, in Q methodology, by *concourse theory* (Stephenson, 1978).

A concourse for a psychological event (such as Margaret Boden's essay) consists of separating statements of fact from statements of opinion (self-reference), and recognizing that a collection of the latter can represent, theoretically, the complex subjectivity of the individual about the event. The concourse for Boden's essay is like 2,000 pieces of a jig-saw puzzle spread randomly before one, representing sheer complexity—and every piece is one of her self-referential statements. These, we know, constitute the essence of creative *transitory* thought, that is, from which *new* ideas have their origins (facts are based on existing ideas or assumptions of substantiality). And indeed, given a sample of her self-referent statements it is possible for Boden to describe with them (as Q sorts) different aspects of her essay (as we can do, substituting for her), the factor analysis of which proves that there indeed are "jumps" in her transitory thought, corresponding to what she designated as "action-plan."

But note especially the achievement: the factors depend only upon *her* transitory thought, and have no direct causal links to the psychological principles she has involved in her essay. The latter are discarded, except for one main principle, that of pleasure-unpleasure, the basis of Q technique.

Measurement of My Intention to Buy Bread

Consider, then, an investigation of my own intention about buying bread. It is formalized in relation to J. R. Kantor's (1959) expression for a psychological event (PE):

$$PE = C(k, sf, rf, hi, st, md)$$

where symbols sf, rf, hi, st, md have reference to the phenomena as understood in everyday language use—for example, that I need a loaf of bread (sf), buy a loaf (rf), there being historical (hi), immediate setting (st), and medium of interaction (md) functions in the total interaction represented by C. Symbol k denotes the situation is unique—it is a particular event when I set out and bought a loaf of bread.

This is to guarantee, as far as possible, that the *complexity* of the event is represented (as in Boden's essay).

History (hi) is of course involved—I was familiar with the baker, but this was also associated with the aroma, familiar also because my mother baked our bread when I was a boy and the memory remains vivid of the aroma and buttered delight of a new-baked "fadge." The setting (st) is also at issue—I am now, because of a recent incapacity of my wife of almost 60 years, the housekeeper, shopper and cook, and bread is a staple. The medium (md) is also involved—that of the economy of pensions and supermarkets. A concourse of the event (PE) is therefore as complex as anything in Boden's analytic survey of intentionality—literally hundreds of self-referent statement can be spoken by me about yesterday's visit to a supermarket

during which I bought a loaf of bread.

The statements are all *mine*, e.g.:

I rarely make a shopping list, and if bread is needed, I often forget to buy it.

I doubt whether a loaf of bread ever put us into paradise or ecstasy!

The chemicals they put in bread to make it market-worthy worries us.

The design for the Q sample was as shown in Table 3. There are (5x2) = 10 combinations of these effects on one level at a time, and four replication of a Q sample of size N = 40 was prepared.

Table 3: Factorial design (buying bread)

	Levels
Effect A (real functions)	sf rf hi st md
Effect B (valency)	Positive Negative

With this I performed seven Q sorts to represent my psychological experience (PE) in shopping at a local supermarket as of *now*. Duly factored, the data are in Table 4.

Table 4: Factor data for shopping

Q sort		***Factors***		
	Condition of Instruction	***A***	***B***	***C***
1.	My current viewpoint	**67**	35	03
2.	What influenced me historically	19	16	**57**
3.	Shopping for my wife's needs	26	**74**	-33
4.	Shopping for guests	33	-05	25
5.	How staff feels about me	**60**	02	09
6.	How my wife views shopping	06	**55**	28
7.	How my wife regards me as a shopper	**78**	-10	39

Note: significant loadings shown in bold

There are three factors in simple structure. The strongest is A, for Q sorts 1, 5, 7. My wife's needs take up factor B (Q sorts 3, 6). And the setting comprises factor C (Q sort 2).

The Understanding

Not one concept of Boden's essay (which represented present-day general psychology) has entered into the above measurement. The result is three *feeling-states* I have about my shopping for a loaf of bread.

Factor A indicated nonchalance—"price never bother me," "I rarely make a shopping list," "a loaf of bread never put us into a state of paradise or

ecstasy," "bread is not our staff of life," and "chemicals in bread don't worry me." This is not because I am profligate, or rich, so that I don't have to "watch the pennies," but because shopping is very low on my list of interests. Shopping is a chore that I have to pursue because there is no one else to do it for us (my wife and myself). My wife is recently invalid, and I am cook, chauffeur, housekeeper, etc. by necessity. Since I retain a British accent and manners, as the kindly supermarket staff has no doubt observed, it is certain that it sees me much as I see myself (Q sorts 5 and 1 are in factor A). The household expenditures are relatively inconsequential—nothing about shopping presents difficulties.

It is not because I don't recognize the skill that many women have achieved with regard to shopping: as my *Quantum Theory of Advertising* (Stephenson 1994) abundantly demonstrates, no one could know more, theoretically, about this than myself. I provide the first evidence for the substantiality of convergent selectivity in this book—that of a woman's skill at shopping, coupons in hand!

None of that, however, enters into factor A.

Factor B is how I feel about shopping for my wife. She is a vegetarian, from birth, and bread is significant to her. I am not a vegetarian, but of course try to cater to her needs. She finds supermarket bread "highly standardized," "nutritious, but is it enjoyable?" She is price-conscious, but because of her artistic interests, I doubt whether she was ever really deeply involved in shopping as such. For one reason or another, bread has more attention from me in supermarket than anything else.

Factor C looks like nostalgia—as when, on our honeymoon in Ireland nearly 60 years ago, we had the choice of ten different breads. But it indicates that we rarely run short (we've never had to borrow a loaf from a neighbor, or gone out specifically for a loaf of bread), and are *not* sure that there's more to do with our time than to make bread—in short, it indicates that there is a reservoir of good feeling about bread, notwithstanding my apparent indifference (A) and the criticism (B).

Thus feeling states of *nonchalance, critical regard,* and *good feeling* are at issue, as distinct aspects on my experience with regard to supermarket shopping for a loaf of bread.

From the Ridiculous to the Sublime

It may seem that the measurement has merely made explicit my attitudes about buying bread. All things remaining more or less as they are, the indication is that I am likely to continue to act in the directions brought into focus by the quantum-theory factors.

People who know my wife and I could perhaps say that they might have said as much without fussing about complexity, concourse theory, and quantum factors. The fact is, however, that the three intentionalities were *discovered,* and could have been presented to visitors from Mars who knew

nothing about us.

Moreover, the factor structure is in complementarity relationships. I cannot shop with A, B, and C *simultaneously.* There is no *one* attitude or interst that can embrace all three. I cannot be nonchalant (A) about either B or C (my wife's needs and a wide concern about good feeling). Nor can I attend to my wife's needs and have the same concern for A and C. (My wife would look at every price, and at the printed information as to contents, etc., something A never does; nor would she readily acquiesce in a "splurge" of good feeling without adequate purpose.) Nor can I shop as at Christmas time, or for a special guest, with the same attitude as either A or B—factor C is for "good feeling," almost "potlatch" in fervor, when one might buy a very expensive gift for someone, in particular one's wife.

Now these are simple complementarities. Those for Margaret Boden were much more self-involving, representing her professional life. Similarly, a study of the intentionality of William James showed an awareness of the astonishing growth in the 19th century, which (in Boden's terminology) was a lifetime action-plan, and which is embodied in his *The Principles of Psychology* (James, 1891), a masterpiece of *nature*, free from gross ideological and philosophical impediments. But he had other intentionalities, quite out of keeping with this, that made him famous and unforgettable.

The significance should be clear, that intentionality can be elicited, intrinsic to any psychological event, from so simple (it seems) as buying a loaf of bread, to an encompassment of one's life's work, whether one is scientist, priest, humanist scholar, businessman, lawyer, judge, politician, general or admiral, workman or housewife. In each case the foundations are the sheer complexity of the self-referential transitory thought encountered.

It is amenable, however, to quantum theory. Which means, with Henry Brooks Adams, that the assumption of unity, the mark of human thought in the Middle Ages, has now to yield to that of complementarity. Man never has had only one intentionality. He always has had a few.

The implications of this are of very great interest. Psychologists and psychotherapists remain largely under the assumption of unity for their subjects, as if (with Virginia Woolf) there is one key *Self* that holds sway over a thousand others of daily life. With Melanie Klein, one has a different conclusion, that somehow, at bottom, *greed, jealousy*, and *envy* color our lives as fundamental—it is nearer the *natural* state of man than most of us are perhaps prepared to accept.

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