Pattern and Being

Daniel Dennett's landmark "Real Patterns" (1991) is an essay in ontology: its topic is the being of entities. Ostensibly, it is prompted by questions about the reality of intentional states, and about the implications of Dennett's own seminal account in "Intentional Systems" (1971/78). But these are pretexts: the issue is not intentionality at all, except in passing, but rather being. Intentional states—beliefs, desires, and the like—frame the discussion, motivating it in the introduction, and secured by it in the conclusion. But all the main points are made in a more general way, in terms of patterns. Intentional states are just a special case, and there can be other special cases as well, the status of all of which we will be able to understand once we understand the ontology of patterns more generally. In the same spirit, I too will mention the intentional only incidentally, and will focus instead on the general case. (Also, I will take it for granted that the reader is familiar with Dennett's work, especially the two articles just cited.)

1 Patterns and Their Elements

From the beginning, Dennett's ontological investigation of patterns exhibits a perplexing vacillation between two levels. It can be brought to the fore with the following question: What are the entities the status of which is to be illuminated? Are they the patterns themselves, or are they rather the elements (components) of the patterns? This distinction should not be confused with another: namely, that between patterns considered abstractly or concretely. For instance, a melody is a pattern of notes, varying relative to one another in pitch and timing. Abstractly, the melody need be in no particular key, register, or tempo, not to mention at any date or location. But in any concrete instance
(of which there can be arbitrarily many), these and all other characteristics must be determinate. The vacillation is between the pattern and its elements, the melody and the notes, not between the abstract form and its concrete instances.

On the one hand, the title "Real Patterns" suggests that it is the patterns themselves, rather than their component elements, whose ontological status ("reality") is to be explained and defended. This interpretation is reinforced by the initial example of a visible pattern of dots within a frame: the status of the dots is never questioned, but only that of the pattern of black and white stripes that they make up. Dennett says: "I take it that this pattern, which I shall dub bar code, is a real pattern if anything is" (31) and then asks the essential question: "what does it mean to say that a pattern in one of these frames is real, or that it is really there?" (32) Again, the invocation of mathematical randomness, or the incompressibility of a bit map (32–33), presupposes the bits or the "data". Only the status of the pattern itself is in doubt: "A pattern exists in some data—is real—if there is a description of the data that is more efficient than the bit map, whether or not anyone can concoct it." (34)

On the other hand, Dennett introduces his catalog of "different grades or kinds of realism" about beliefs by asking: "When are the elements of a pattern real and not merely apparent?" (30) Indeed, in assimilating the intentional stance to radical interpretation and radical translation (30 and 46), Dennett is inevitably (and willingly) committed to the brand of holism that understands intentional items in terms of the ordered wholes they participate in (not any wholes they might individually comprise). That is, the intentional items, such as beliefs and desires, are not themselves the relevant patterns, but are rather the elements of the relevant patterns. Hence, to inquire after the ontological status of intentional states is to inquire after the status of pattern elements, not patterns. These are the two levels between which Dennett vacillates.

It is tempting to suppose that the opposition must somehow be false, that the ontological status of the pattern and its elements must go hand in hand—because (as one wants to say) "each is defined in terms of the other". Insofar as this is right, however, it is a posing of the problem rather than a solution. The problem is: How can such a "going hand in hand" make nontrivial (non-question-begging) sense? In resolving this problem, it should become clear for the first time what patterns have to do with ontology.

2 To be is not just to "count as"

It is important to avoid at the outset an attractively easy false start. What, after all, are the bits in a bit map, or the pixels in a picture? As was pointed out above, these elements are taken for granted—their "reality" is not in question—when we ask about the status of mathematical or visual patterns of them. But, of course, their status as bits or pixels is not at all independent of those patterns. A particular flipped flip-flop or black dot on white paper would not count as a bit or pixel except insofar as it is a component in some relevant mathematical or visual pattern. Likewise, nothing could count as this sort of mathematical or visual pattern except insofar as it is a pattern of such bits or pixels. Accordingly, it seems, the patterns and their elements are defined in terms of one another, and their respective statuses go hand in hand.

But this misses the point: the being of the bits or pixels is not at issue all, but only whether the terms 'bit' or 'pixel' apply to them—that's what "counting as" a bit or pixel means. Thus, whether it's a pixel or not, the dot is still there; its status as an entity (namely, a dot) is quite independent of whether it counts as a pixel in some visual pattern. The corresponding approach to intentional states would be to say that they are (for instance) structures in the brain, identifiable neurophysiologically or syntactically, but so related to one another in an overall pattern that they also count as beliefs and desires. The being, the "reality", of such states would be nothing other than that of those brain structures—for they would be identical. Such an account (a version of token identity theory) would be ontologically straightforward and familiar. It might well be Fodor's view, or even Davidson's; but it surely isn't Dennett's.

It bears mentioning, therefore, that the analogy that Dennett still proposes between beliefs and centers of gravity (27–29) is completely misleading, and should be discarded. A center of gravity is nothing other than a spatial point at a time, or a point trajectory through time. Hence, its ontological status is exactly on a par with that of any other spatial point or trajectory—including the center of the smallest sphere containing all the socks Dennett has ever lost. Whether a given point or trajectory counts as a center of gravity, or a lost-sock center, depends on its position relative to certain masses or socks; but its being is spatial, and independent of what else it counts as. Accordingly, the greater usefulness, in scientific calculation, of centers of
gravity does not confer on them any further ontological status; they are no more "real" than lost-sock centers—just more worth keeping track of. This is not at all analogous to the claim about beliefs: as just noted, Dennett never suggests that beliefs are simply a subset of the set of all brain structures (or computational states, or anything else independently specifiable) which, by virtue of participating in some pattern, also count as intentional.

3 Patterns in the Life World

Centers of gravity and bit patterns, however, are merely preparatory for Dennett's richest and most developed example: patterns in the Life world. Although the lessons will ultimately be quite different, Life looks at first to be little more than a kinetic variant of a pattern of pixels. Thus, much as a black dot is a black dot, whether or not it counts as a pixel in some image, so also a Life cell is a Life cell, whether or not it counts as a component in a glider, eater, or other pattern in the Life plane. Moreover, the same point can be made at successive higher "levels." For instance, if a Turing machine is implemented (as can be done) as a higher-order pattern of gliders, eaters, and so on, then each glider is the glider it is, whether or not it also counts as (say) a token on the tape of that Turing machine. Though its status as a tape token depends on its participating in the higher-order pattern, its own status as an entity—a glider, as it happens—does not.

A glider, as its name suggests, moves across the plane from moment to moment; so it cannot be identified with any fixed set of cells or cell states; but, somewhat like a trajectory, it might plausibly be identified with a temporal sequence of sets of cell states. The trouble with such an identification is that it ignores the motivation for picking out this particular kind of sequence. Thus, there are any number of definable sequences of sets of cell states—which, when they occur, are all equally "actual" or "real". But some few of these kinds of sequence, including gliders, are very special. Roughly, they persist as reidentifiable nonempty configurations against an empty background.

One way to think about this special persistence is from below, as a consequence of the kinetic law governing cell state changes in the Life world. This law entails that if, at a given time, all the cells in the Life world are off except those that would be on for a single glider at that time, then the sequence of sets of cell states for that glider will occur in the future of that world—that is, the glider will persist. Further: the effect of the kinetic law is entirely local, which means that the glider will persist for as long as those cells sufficiently nearby are all off (what's happening far away doesn't matter at the moment). To put it another way, the law guarantees that once a glider sequence is started, and so long as it is not interfered with, it will continue. Very few of the definable sequences of sets of cell states have this feature of guaranteed persistence; hence those that do are special.

A different way to think about persistence is to consider, not what makes it possible (and rare), but what makes it noteworthy or important—to ask, in effect, what's so special about persisting configurations. Dennett speaks of their "salience as real things", and says this means that one can "proceed to predict—sketchily and riskily—the behavior of larger configurations or systems of configurations". In other words, persistent patterns and structures are special because they can be relied upon as components of higher-order patterns or structures—such as tokens on Turing machine tapes. This is to think about the persistence, or, more broadly, the specialness of certain patterns from above, in terms of what they participate in or contribute to.

In a Life-world implementation of a Turing machine tape, the gliders are, at the same time, patterns and components of patterns. They fall, therefore, on both sides of Dennett's initial vacillation. As we shall see, it is precisely in this double or bivalent position, including "specialness from above", that patterning can have ontological import—that is, confer status as an entity. But this will require more careful attention to the notion of 'pattern'.

4 Patterns and Pattern Recognition

Relatively early in his article, Dennett inserts a remarkable passage, one with little evident connection to the remainder of the text.

... I propose that the self-contradictory air of "indiscernible pattern" should be taken seriously. We may be able to make some extended, or metaphorical, sense of the idea of indiscernible patterns (or invisible pictures or silent symphonies), but in the root case a pattern is "by definition" a candidate for pattern recognition.

Nowhere in the ensuing discussion, however, does he tell us anything about what pattern recognition is, or why it should have this definitive
significance. On the contrary, no sooner has he acknowledged the implication of an "unbreakable link to observers or perspectives" than he turns instead to "discernibility-in-principle" and the mathematical definition of randomness—two ideas that seem as observer independent and nonperspectival as one could hope to find. Tracing this ambivalence will show, by steps, that Dennett understands 'pattern' in two different ways, that he needs both of them to make his ontological point, and that this is what "stances" are all about. But, to get there from here, we first have to ask what it means to recognize something.

Recognizing, as the quoted passage indicates, is at least discerning or discriminating. To recognize something is to respond to it in a way that distinguishes it from other things; to recognize is to tell apart. But differential response cannot be the whole story, for two deeply related reasons. First, what is recognized is always some determinate item, feature, or characteristic of the confronted situation, whereas a given response can equally well be taken as a response to any of several distinct things. Second, recognition, unlike response, is a normative notion: it is possible to misrecognize something, to get it wrong, whereas a response is just whatever response it is to whatever is there. These are related because: only insofar as something determinate is supposed to be recognized, can there be an issue of recognizing it rightly or wrongly; and it is only as that which determines rightness or wrongness that the object of recognition is determinate.

Thus, in order to understand recognition, as distinct from mere differential response, we must understand these interrelated phenomena of object determinacy and normativity. Consider an automatic door: it responds to an approaching pedestrian by opening, and to the pedestrian's passing through by closing again. Of course, it might respond identically to a wayward shopping cart, or a large enough piece of plaster falling from the ceiling; and we can even imagine it being triggered by the magnetic fields of a floor polisher passing near its control box, across the hall. Are such incidents misrecognitions? Has the door mistaken plaster or a floor polisher for a pedestrian, say? Obviously not, for pedestrians, plaster, and polishers are nothing to a door. Therefore, even in the usual case, we cannot say that it has recognized a pedestrian.

Should we conclude instead that it recognizes pressure on its floor pad, the current in some wire, or—in the limit—a force adequate to open it? Again, no; for if the possibility of error is systematically eliminated, then it's vacuous to speak of correctness or recognition at all. Rather, whenever the door opens, there is an extended set of relevant causal factors (some proximal, some distal) any of several of which might equally well be identified as "the" factor to which it responds—depending on what we're interested in at the time. But since the door doesn't get any of them right or wrong—it just responds as it does—none of the responses amounts to recognition. The same can be said about a trout striking at a fly (whether natural or hand-tied), and, in my view, about a hound chasing a rabbit (whether across a field or around a racetrack).

If, on the other hand, opening for anything other than a pedestrian would amount to an error (regardless of what pressures or currents did or didn't intervene), then, in the ordinary case, the pedestrian (and not any pressure or current) would be the object of the response; that is, the system would recognize pedestrians. (This is just what the situation would be if the "system" were a human employee.) To put it more generally, if some specific causal factor can be singled out as making the difference, from case to case, between correct response and error, then, in any given nonerroneous case, this same factor also can be singled out as the object recognized. And likewise vice versa: if a response has a determinate proper object—if it is a recognition response—then, absent that object, the response is an error. In sum, recognition, object determinacy, and the possibility of mistake belong together.

Thus, to comprehend the full content of the suggestion that patterns be regarded as candidates for recognition, we will need to understand the normative standards according to which they can stand individually as criteria for correct recognitions.

5 Recognizabilia or Orderly Arrangements?

There are really two notions of 'pattern' at work in Dennett's article. On the one hand, there is the idea that patterns are "by definition" candidates for discernment or recognition; on the other, there is the idea that a pattern is some sort of orderly or nonrandom arrangement—the opposite of chaos. The first idea invites an operational or practical definition, via an account of recognizing and correctness; the second invites an explicit or theoretical definition, in terms of what's arranged, what arrangements are possible, and which of those arrangements are orderly. The mathematical definition, as well as all the pixel examples, are of this latter sort. The obvious question is: Why
have both? In particular, why bother with the looser operational
definition when the explicit theoretical definition is available?

One advantage of the "operational definition" in terms of recogni-
tion is that it does not presuppose or depend on any determination of
what the pattern is a pattern of. The mathematical definition, by
contrast, only makes sense if the "bits"—or, more generally, the possi-
ble types and relations of its elements—are specified in advance. But
recognition needs no such prespecification: you just have to "know
one when you see one". For instance, when I recognize the faces of my
friends, or the expressions on their faces, or the genre of a book, there
are no particular bits or other elements that these are patterns of. A
delighted smile is not a pattern of epidermal cells, still less of pixels or
light waves; if anything, it's a concurrence of cheek lift and brow
movement, of lip shape and eye sparkle. But these are no more ante-
cedently determinate than smiles themselves, perhaps less so. Smiles,
as the definition suggests, are what they are because we recognize
them to be, and not the other way around. Likewise, the recognizable
mystery or romance in a novel is not a pattern of words, still less of
letters, but of something more like characters, situations, and mood—
again, because readers reliably take them so.

The recognition-based definition is liberating in a second respect
as well: it is not oriented exclusively to the "internals" of the recogni-
ted pattern. Thus, when I recognize something as a reassuring or a
cautious gesture, my response is influenced not only by the specific
character of the gestural motions, but also, and perhaps largely, by the
circumstances in which they are made. "Context dependence" of inter-
pretations is, of course, familiar; but it is frequently understood on a
broadly inferential model:

1. Any instance of I, in context C, would be (or count as) an R.
2. Here is an instance of I; and it is in context C.
3. So, here is an R.

This presumes, however, that C and I are identifiable as such inde-
pendently, and that the recognition of R is then just drawing a conclu-
sion—not really a recognition at all. But very often, I think, context-
informed phenomena (gestures are but one example) are recognized
for what they are, quite apart from any independent recognition of the
context or of anything which is "in" the context. Indeed, if there are to

be any inferences, they can just as easily go in the other direction.
Joint recognizability of instance-cum-context yields a notion of pat-
tern notably divergent from that of an orderly arrangement of parts.

In the meantime, requiring determinate prespecification of the bits
or elements, as the mathematical definition does, can be a philosophi-
ical embarrassment, in more than one way. First, many relevant pat-
terns—conspicuously including the behavioral patterns that support
intentional interpretation—do not seem to be made up of well-
defined bits or elements. Just which causal commerce with the envi-
ronment amounts to perception and action is by no means specifiable
in advance, nor can it be precisely delineated in any case. Second, the
account of patterns as orderly arrangements of predetermined ele-
ments is an invitation to metaphysical reductionism: the thesis that
these patterns are "nothing but" their elements as arranged. Clearly,
however, (whatever else one thinks about it) this runs counter to
Dennett's motivating insight that "real patterns" might be of distinctiv-
eontological status and interest. Third, if (in spite of all the foregoing)
an attempt were made to merge the two notions of pattern, such
that recognizable patterns must at the same time be arrangements of
prior elements, then, arguably, their recognizability would have to be
via prior recognition of those elements; and that would be a version of
epistemological foundationalism.

No sooner are these observations made, however, than the outline
of a rapprochement becomes roughly visible. For if the independent
identifiability of the elements of an orderly-arrangement pattern is
problematic, and if, at the same time, the identity of a recognition
pattern can be context dependent, then the one hand may wash the
other. Rather than merging (so as to coincide), the two notions of
pattern join forces, to mutual advantage. In this larger conception, the
"elements" of an orderly arrangement need no longer be thought of as
simple ("elementary"), like bits or pixels, or even as independently
identifiable. On the contrary, they might be quite elaborate, elusive,
and/or subtle—so long as some relevant creatures are (or can learn to
be) able to recognize them. This recognizability, in turn, can perfectly
well depend, in part, on their participation in the arrangement (= the
context) of which they are the elements.

In effect, we have "patterns" at two different levels, one level for
each of Dennett's two definitions—but in such a way that (artificially
simplified cases aside) each requires the other. That is, both of the
definitions are integral to a single unified account. What's more, this one integral account reveals how Dennett's ambivalence between the two notions of 'pattern' is deeply connected with his initial vacillation between considering patterns and considering their elements; for both involve the same distinction of "level." But we still must see how their integration enables his ontological insight.

6 The normativity of recognition

Recognition, we noted, is subject to normative appraisal, and has a determinate (purported) object. These related characteristics are what distinguish it from mere differential response. But what they are and how they are possible has yet to be explained. If, however, recognizable patterns are understood as elements of orderly-arrangement patterns, then the resources may be available to supply that explanation. For the elements of an orderly arrangement are by no means arbitrary: the order itself, in conjunction with the other elements, imposes strict constraints on what any given element can be. In particular, it sharply—as a rule, uniquely—limits which among the causal antecedents of a response could possibly be such an element. This limitation, in other words, picks out a single factor in the causal background of the response as having a special status and importance, vis-à-vis the larger orderly arrangement; and then, if that single factor could be identified as its object, the response would amount to a recognition.

To pick out which factor, if any, would have the status of object, however, is not yet to show that any factor does have that status. For that, something else about the larger, two-level picture must be brought out, something in terms of which responses can be deemed right or wrong according as they track that object. Or, to put it differently, it is yet to be shown how this singled-out factor, the candidate object, can serve as a criterion for the correctness of the response.

Return to the Life world. Since a universal Turing machine can be implemented in it, so can any other computer architecture, and any program on any such computer—indeed, in many different ways. Dennett imagines a chess playing system implemented (several levels up) in a vast "galaxy" of gliders, eaters, and so on; and then imagines setting it up to play against itself. (41) The point of the exercise is that an outsider might adopt any of a variety of perspectives on this assemblage, including, at the highest level, the intentional stance.

... one can shift to an ontology of chess-board positions, possible chess moves, and the grounds for evaluating them; then, adopting the intentional stance toward the configuration, one can predict its future as a chess player performing intentional actions—making chess moves and trying to achieve checkmate. Once one has fixed on an interpretation scheme, permitting one to say which configurations of pixels count as which symbols ..., one can use the interpretation scheme to predict, for instance, that the next configuration to emerge from the galaxy will be such-and-such a glider stream (the symbols for 'R×Q', say). (41)

There are in fact three distinct perspectives or levels mingled in this dense passage: (i) the chess ontology (board positions, possible moves, and so on); (ii) the ontology of symbols for chess moves ('R×Q'); and (iii) the intentional ontology (actions, tryings, and the like).

Focus, for the moment, on the chess ontology: certain subpatterns in this galaxy are chess pieces and positions, and appropriate changes in them are chess moves. What makes them so? Clearly the basic requirement is that, understood as chess phenomena, they be found reliably to accord with the rules of chess—the pieces must be those defined for chess, they must start in the standard starting position, the moves must be legal (and not too bad), and so forth. Implicit in these are also certain "enabling" prerequisites, such as that the pieces and positions be reidentifiable, that they be changeable in the ways permitted by the rules, that they be otherwise reliably stable, and so on. Consistent with those, anything whatever can serve as a chess set—including, but by no means limited to, subpatterns in a galaxy of flashing cells in the Life plane.

Chess phenomena, constituted as they are in accord with these preconditions, are a perfect example of what was earlier described as specialness from above—something's being noteworthy as a pattern not by virtue of how it's built out of elements, but by virtue of how it participates in or contributes to something else. Hence, in our larger unified account, chess pieces, locations, and moves, would fill the bill as recognition patterns, functioning as elements in the orderly-arrangement pattern defined by the rules of the game.6 The rules of chess, moreover, are paradigmatically normative.7 Consequently, at least for domains with this particular structure, a credible source is at hand for the corresponding derivative norms of recognition. Two main things, therefore, remain to be shown. First, how this derivation works; that
is, how the standards that govern chess phenomena as such induce norms for the recognition of those phenomena. And, second, how the account, introduced in terms of rule-governed games, can be seen to generalize to other domains as well.

7 Chess players and their commitments

A fundamental limitation of Life-world chess is that one can at best observe it as an outsider; there is no provision for interactive input to the system, hence no way to play against it. So consider instead a more congenial system, such as a computer that accepts opponents' moves via keyboard input, and continuously displays the current position on a screen. Again, what makes these display patterns chess pieces is not that they look like old-fashioned chess pieces to us (indeed, they may not), but that they are positioned and moved according to the rules. Only this time we're not just observing, we're playing—so some of those moves are our own. What difference does that make?

If you want to play chess, you have to play by the rules, and insist that your opponent also play by the rules—you have to commit yourself to the game proceeding in accord with the rules. In any given instance, that means you have to be able to tell what the current position is, what move is being made (considered), and whether that move is (would be) legal in that position. And you must be resolved to resist if it isn't. In other words, in taking on a commitment to the legality of the game, you inevitably also take on a commitment to recognize the pieces, positions, and moves—and recognize them correctly—for only in that way can legality be judged and maintained. This is how the norms that govern chess phenomena as such can induce norms for the recognition of those phenomena.

More specifically, a concord of two potentially discordant factors is required. If we ask which recognitions are correct, and why, we might answer that those recognitions are correct that find the positions to be stable and the moves legal—because these are the conditions on there being chess phenomena to recognize at all. But this risks vacuity; for if there were no other constraint on correct recognition, then arbitrary patterns could be gratuitously "recognized" as the moves of any legal game you like. The first leaf falling today could be white's opening, P-K4; the second leaf could be black's reply, also P-K4; and so on, at tournament level. Obviously, what keeps recognition from being thus vacuous is its being beholden somehow to what is ostensibly being recognized, yet in such a way that the criteria of correctness are induced from above.

Here lies the true import of the phrase "you know one when you see one": recognition is essentially a skill. It can be easy or arduous to acquire; but once mastered, it can be performed reliably and consistently. What's more, competent practitioners can almost always tell when they're having difficulty; and, in such cases, they can much improve their performance by taking extra care, making multiple attempts, asking for help, and so on. This conscientious, sometimes painstaking, practical exercise is the concrete way in which recognition holds itself to its object. The constitutive standards for a given domain—the rules of chess, for instance—set conditions jointly on a range of responsive dispositions and a range of phenomena: if they are both such that the former consistently find the latter to accord with the standards, then the former are recognition skills and the latter are objects in the domain. But such eventual concord is anything but vacuous: it is rare and, in general, a considerable achievement.

It amounts to an achievement precisely because skillful practitioners—observers are a special case—can tell if it isn't working, and sometimes rectify it. Thus, whatever form the chess pieces, positions, and moves take, players who play with them would have to be able to tell if pieces were disappearing, positions randomly changing, or the moves illegal. And not only could they tell, but they wouldn't stand for it. At first, an apparent breach would elicit a more thorough examination, double checking, perhaps excuses or explanations—all geared to correcting the recognitions, in case there were some mistake. But these attempted corrections are themselves just further exercises of the same recognition skills constituted along with the recognizable phenomena according to the standards for the domain. This means that the efforts may well not succeed: it may turn out that the alleged chess phenomena are not reliably stable or legal after all—which is to say, they may not be chess. Thus, insistence on the constitutive standards is on pain of giving up the game. The fact that this could happen is what makes it an achievement when it doesn't.

More generally, if a larger arrangement pattern is constitutive for the domain of its elements, and is as such insisted upon by skillful practitioners, it can induce the norms by which those elements can themselves be recognition patterns. That is, the elements can be criterial for the correctness of their own recognition, and in that sense objects.
8 Ontology without equivocation

The term 'object' brings connotations of "objectivity" and "autonomy": an object is an entity "in its own right", quite apart from us—which is why it can stand over against us as a criterion, hence why we can be wrong about it. Though Dennett does not use the word 'object' in this privileged way, he unmistakably endorses these connotations in his pervasive talk of ontology, realism, and "salience as real things". His purpose, of course, is to explicate and defend his own long-standing position on the ontological status of intentional entities, a position he now wants to call mild, intermediate, or semi realism. I am not happy with any of these expressions. I do agree with Dennett's final assessment that the view itself is clearer than the labels (si); but that, it seems to me, is not merely a credit to the view, but also a discredit to the labels.

Let us begin by considering the reality of chess pieces. The first temptation, always, is to think of chess pieces as the familiar manipulable figurines—conventionally shaped lumps of wood, plastic, or whatever—and these, of course, are paradigmatically real. Being real, after all, is being thingy, being in the manner of the res; and the cohesive, enduring corporeal lump is the paradigm thing. We should, however, be very hesitant to identify chess pieces with things.

Traditional metaphysics interprets the thing as substance: the individual perduring bearer of multiple variable properties. The substantial thing is independent in a strong sense, as that which needs nothing else in order to be. This gives the metaphysical meaning of 'property': that which is "proper to" or "owned by" a substance all by itself, that which a substance "has" regardless of anything else. In the case of corporeal substances, their spatio-temporal continuity and integrity is the basis of their identity and individuality; and their properties include mass, shape, hardness, temperature, and the like. By contrast, market price, functional role, ecological niche, and so on, are not properties of things: they can never "belong to" an individual independently and all by itself. The fact that this ontological understanding remains vague in important respects, and has evolved in a variety of distinct traditional directions, should not blind us to its very considerable specificity and definiteness. It is anything but tautologically empty and noncommittal.

What then about chess pieces—rooks, pawns, knights—are they substantial things? Manifestly not. A chess piece is 'defined', what it is determined, by how it moves around the chess board in relation to other pieces, how it threatens, protects, captures, and is captured by them. Apart from its participation in chess, a rook makes no sense, and could not be: to be a rook is to play the part of a rook in a chess game. That is why patterns in the Life plane or on a computer display can be rooks. The point is not that such patterns are "insubstantial", so at least some rooks are. Rather: no rook is a substance. No matter how the metaphysical notions of independence and property are worked out, they will not apply to rooks. Nothing about a rook is determine, not even its "rookness", apart from its participation in a chess game.

It is equally important to resist the thought that rooks, in contrast to corporeal things, are "abstract". Insofar as abstraction concerns the consideration of properties apart from any particular instantiations in things, then it has nothing to do with chess pieces. But if we broaden the abstract/concrete distinction to mark the difference between general characteristics or possibilities and their determinacy in particular individuals, then rooks can be considered either way. Considered in the abstract, rooks—any rook, "the" rook, rooks as a type—always start in a corner of the board, move only along ranks and files, tend to be more valuable than knights, and so on. But at a particular point in a particular game, this particular rook is a fully concrete individual: everything that can be determinate for a rook is determinate for this one—the particular square that it's on, the particular other pieces that are threatening or blocking it, its particular history of prior moves, its particular strategic value in the current position, and whatever else.

Must we not acknowledge, however, still speaking of this particular rook, that it is identical to—the very same entity as—this particular lump of black plastic? Further, having granted that the lump of plastic is a thing, must we not concede after all that the rook, this particular rook token, is a thing too—the very same thing? Whatever the fate of token identity theory in other domains, I believe it is demonstrably false for chess pieces. Chess imposes quite definite identity conditions on its pieces, and they simply do not coincide with those for lumps of plastic. For instance, a game begun with the plastic set in the garden can, after lunch, be carried on with the ivory set in the library. Now, the rule for casting stipulates that one cannot castle with a rook that has previously moved, even if it has since returned to its original square. And, clearly, for one continuing game, black's queen-rook would be the same piece in the garden and in the library: that is, black
the being of the intentional and the being of the physical, are, of course, central to the account; and it is to illuminate these that patterns and games are discussed. But the inner coherence and genius of Dennett’s position lies not in the analogies among these distinctions, but the underlying unity that binds them all together, that makes them all distinctions among ways of being.

Famously, Dennett introduces and explicates intentionality in terms of what he calls “the intentional stance”. A stance, on the face of it, is a kind of posture or attitude that somebody can take toward something, a specific way of regarding and dealing with it. That intentional systems should be defined in terms of a possible attitude toward them has misled many into thinking the point is to downgrade their status, to imply that the intentional is somehow secondary, observer relative, or artificial—in contrast, say, to the physical. But, in this respect, Dennett puts the intentional and the physical exactly on a par; each is understood in terms of a possible stance. To be sure, the physical stance is importantly different from the intentional; but it is a stance, nonetheless. And there are others: Dennett discusses also the design stance, and later considers the possibility of a moral or personal stance. Presumably, he would be equally receptive to stances for evolutionary biology, cultural anthropology, macro economics, and so on.

Officially, a stance is a strategy that one might adopt in order to predict and explain the behavior of something. Which stance one adopts in a given case is, of course, constrained by which strategies can be expected to work; but it is otherwise optional—a pragmatic decision, based on interests and purposes. Thus, a person might be treated as a physical object when calculating elevator loads, as a designed system when performing surgery, as an intentional system when offering coffee, and so on. The phenomena predicted and explained from the respective stances are not the same. Purposive action, for instance, is not the same as physiological movement; and both are distinct from physical motion. Indeed, each stance has its own peculiar vocabulary, and, in general, even its own observational and explanatory methodology. So, from the design stance, one speaks of what the various structures and processes are for, and explains how their organized complexes work; and, in this context, one can say also that something is malfunctioning, the wrong size, out of kilter, or broken—terms that make no sense from either the intentional or the physical stance.

9 Stance and being

It would be a misunderstanding, therefore, to take the analogy between intentional states, on the one hand, and patterns and game phenomena, on the other, as a way of mitigating or watering down the ontology of the mental—as if to say they’re “no more real” than these. The distinctions among the ways of being, and, in particular, between
But a stance is more than just an attitude toward or a perspective on things, more even than a method and terminology for dealing with them. Adopting a stance is taking a stand. Why? Because it is this alone—commitment to constitutive standards—that allows that toward which the stand is taken to stand out as phenomena, to stand over against us as objects. Such standards determine the being of the objects: what it is for them to be, and what is possible and impossible for them. Practitioners’ insistence that the objects accord with the standards presupposes an ability to tell whether they do, and a resolve not to stand for it if they don’t—either by finding out what went wrong and fixing it, or (failing that) by “giving up the game”. Only in the light of this commitment can it be said nonvacuously, when things go right, that phenomena have been discovered, that objects have been constituted.\(^\text{16}\) Only against a genuine and determinate possibility of failure can there be any meaningful success.

Dennett discusses only the intentional stance in any detail. For the intentional domain, rationality is the constitutive standard—“rationality is the mother of intention” (1971/78, 19). Although Dennett speaks of a presumption of rationality, rather than a commitment to it, the force is the same.

The presumption of rationality is so strongly entrenched in our inference habits [about people] that when our predictions prove false, we at first cast about for adjustments in the information—possession conditions (he must not have heard, he must not know English, he must not have seen x, been aware that y, etc.) or goal weightings, before questioning the rationality of the system as a whole. In extreme cases personalities may prove to be so unpredictable from the intentional stance that we abandon it ...

\(^{17}\text{1971/78, 32}\)

In other words, for intentional attribution, we insist upon rationality: in confronting apparent breaches of the standard, we first attempt to rectify them (that is, to explain them away in terms sanctioned by the standard itself); and, failing that, we give it up. This, I claim—and I intend it fully in the spirit of Dennett’s stances—is the essence of all science, and, indeed, of all objective knowledge.

\textit{Pattern and being} 285

\textbf{10 Outer and inner recognition}

To bring out the essential shape of “Real Patterns”, I have so far suppressed the noise in it. Yet noise is an integral component of Dennet’s insight. Intentional systems, as he is constantly reminding us, do not have to be perfectly rational—just mostly (a lot better than chance). Ultimately, in fact, the notion of “perfect rationality” (or, for that matter, perfect accord with constitutive standards more generally) need not be well defined. This is one of several respects in which the “chess stance” can be misleading, if taken as more than an introductory example; for digital games are quite exceptional in the explicit precision with which their constitutive standards can be articulated, and the corresponding absoluteness of the demand for compliance. Even physics, notable as it is for ontic precision, is less well spelled out in its ontological foundations than is chess, and more tolerant of anomalies in its concrete practice.

To see the possibility of unarticulated (perhaps inarticulable) constitutive standards, we turn again to Dennet’s definition of pattern in terms of recognition, only this time from the inside out. What we have hitherto called “recognition patterns” are patterns that can be recognized, so to speak, from the outside, when the pattern as a whole is present. These have served, in the two-level account, as the elements of a larger “arrangement pattern”, which is the global structure of the domain as prescribed by its constitutive standards. In principle, however, there need be no articulate specification of these standards: all that is really essential is an ability to tell, in any given case, whether the standards are being met. Thus for chess, it would suffice in principle if the players could tell which moves were legal, regardless of whether they could spell out the rules that define legality—or, indeed, whether there were any such rules.

So we can distinguish two fundamentally different sorts of pattern recognition. On the one hand, there is recognizing an integral, present pattern from the outside—\textit{outer recognition} we could call it. On the other hand, there is recognizing a global pattern from the inside, by recognizing whether what is present, the current element, fits the pattern—which would, by contrast, be \textit{inner recognition}. The first is telling whether something (a pattern) is there; the second is telling whether what’s there belongs (to a pattern). When chess players recognize pieces, positions, and moves, it is outer recognition of the constituted phenomena; when they recognize these phenomena as legal or
illegal, it is inner recognition of the constitutive standards. What these have in common, as species of recognition, is that "you can tell by looking"—that is, in both cases, it's the exercise of a practical, learnable skill (not an inference or a rule-application).

What is crucial for objectivity is that the two cognitive skills be distinct. (They cannot, of course, be independent, inasmuch as what is recognized in the one way is constitutive for what is recognized in the other.) In particular, skillful practitioners must be able to find them in conflict—that is, simultaneously to outer-recognize some phenomenon as present (actual) and inner-recognize it as not allowed (impossible). For only in the face of such potential discord does it make sense to insist that the patterns accessible to outer recognition accord with the pattern accessible to inner recognition; and only on the strength of such insistence can the former pattern be a standard according to which the former are constituted as objects.

The essential but perhaps elusive distinction between these two cognitive skills is reflected in the equally essential but sometimes elusive distinction between knowledge and understanding. Roughly, knowledge is outer recognition, understanding inner. That is, phenomena are known insofar as they are recognized as present with their respective characteristics and relations; they are understood insofar as they are recognized as being in accord with the standards constitutive for their domain. If understanding is lord of the domain, explanation is concierge: to explain a phenomenon is to "show it in", to exhibit its allowability according to the standards, to let it be. This is what lies behind Dennett's saying that a stance is a strategy for explanation. A stance, as a commitment to the relevant standards, as made concrete in the respective cognitive skills and insistence on their concord, is nothing other than a strategy for showing that the observable phenomena fit the overall constitutive pattern. The centrality of explanation in the philosophy of science has exactly the same provenance.

Herein lies also, I think, the ultimate limitation of the intentional stance. For, if the foregoing is correct, then neither knowledge nor understanding is possible for a system that is itself incapable of adopting a stance—that is, insisting that objects accord with constitutive standards. By this test, neither extant animals nor current computers can know or understand anything. This jibes with—I suspect, accounts for—widespread intuitions to the effect that "genuine" or "fully-fledged" intentional states cannot properly be ascribed to animals and/or computers. They may exhibit, one wants to say, behavioral regularities that are best characterized as informed goal directedness; but they don't understand what they're doing at all. Dennett has hoped to demystify such notions as belief and desire by assimilating them to the posits of the intentional stance—being careful all the while to acknowledge the differences of degree between more and less sophisticated intentional systems. But "beliefs" and "desires", in the complete absence of any understanding, indeed the absence of any possibility of understanding, what they are about, could hardly be of the same order as what we ordinarily understand by these words. So the differences are not of degree; and the demystification fails.

Yet, in a larger sense, it succeeds. For the true achievement lies not in the account of the intentional stance in particular, but in the account of stances and objectivity in general. If the so-called "intentional states" ascribed in the so-called "intentional stance" are not genuinely intentional, that indicates no worse than a misnomer—and certainly not a misidentification or mischaracterization of an important domain of objective inquiry. But further, if intentionality proper is ever to be understood as an objective phenomenon, then it too must be constituted in accord with a standard-setting stance. Whether this stance, as itself a stance toward standard-setting as such, must be in some unique way a stance toward itself and its own finitude, can here be left open. In that direction lies the existential analytic of dasein, an undertaking which Dennett has only just begun.

Notes:
1. This is not, of course, to pretend that spatial being is unproblematic, nor that it is unconnected with physics and/or everyday life. The point is merely that counting as a center of gravity or a lost sock center is not, on the face of it, an ontological determination.
2. Note: "the Life world" here refers to the realm of possible structures and processes in the two dimensional formal system called "The Game of Life"; it has nothing to do, not even as a pun, with Husserl's Lebenswelt.
3. Though Dennett makes nothing of it (nor will I), it is interestingly difficult to say just which cells (at a time) are components of a pattern such as a glider or an eater. Clearly, they must include not just the cells that are "on" there and then, but also at least
some of the adjacent "off" cells; for were those not off, it would be a different pattern. But exactly which cells need to be in which states is not always clear, and may even depend on spatial and temporal context—as when an eater is in the process of consuming something else.

4 The phrase "when they occur" is what differentiates this example from trajectories. A given trajectory through space-time may or may not be the center of gravity for some extended mass; but there's no sense in which the trajectory itself "occurs" or not, depending on this—it's just "there", as a continuous, one-dimensional manifold, either way. A sequence of sets of cell states, by contrast, actually occurs only if the relevant cells are in fact in the relevant states in the relevant temporal order; otherwise, it isn't "there", it isn't "realized" at all.

5 Actually, since Life is deterministic, every configuration has a guaranteed future, as long as it's not interfered with; and one might say that this total future amounts to one "pattern" which persists. But gliders and a few other patterns persist in the much stronger sense that they are periodic; that is, the same momentary configurations (perhaps translated) recur in the same order indefinitely.

6 Whether anyone could, in fact, recognize them as implemented in the Life plane is a separate question; but the essential point could be made as well with a less formidable implementation.

7 But see the distinction between regulations and standards in chapter 13: the former are clearly normative, the latter not. [Note added 1997.]

8 Compare this with Quine's definition: "To be is to be the value of a bound variable"—meaning that identifiable unity of which an arbitrarily complex open sentence is true.

9 In part one, paragraph 51, of his Principles of Philosophy, Descartes writes: "By substance we can understand nothing other than a thing which exists in such a way as to depend on no other thing for its existence." (1644/1985, 210)

10 Relational properties, if not rejected as incoherent, can be conceived as proper to a plurality of substances—but, again, proper to them, regardless of anything else. Extrinsic properties, properties that individuals have by virtue of their relations to others, are then not, strictly speaking, properties at all, but rather abbreviated ways of speaking about pluralities.

11 This, no doubt, is why philosophers from time to time try to explain them away—they're not "really real".

12 In just this spirit, I believe also that Dennett should avoid speaking (as he does, for instance, on page 29) of beliefs as abstract objects. Beliefs, of course do not belong to the thing category any more than chess pieces do; but, in the broadened sense of the abstract/concrete distinction, surely beliefs can be discussed either in abstraction or in the concrete. Thus, one might (as in logic) consider beliefs only with regard to their content, "abstracting away" from the degree of conviction with which they are held, the source of the evidence on which they are based, their reception as good news or bad news, and so on. Concretion for beliefs, by contrast, is to be fully determinate in all such possible regards.

13 The rules for en passant and stalemate also depend on the identity of pieces from move to move. I think the same argument implies that there is no piece identity from one game to another, and hence that there are no chess pieces at all except in the midst of games—in the box, there's just plastic. This is to say, in another terminology, that the that-it-is of a chess piece (its being "in play") is just as dependent on chess as is its what-it-is (its "chess role"). Note that token identity theory for chess pieces breaks down just as thoroughly when the pieces "are" Life-plane or screen-pixel patterns as when they "are" lumps of plastic; in other words, this "are" cannot be the "is" of identity, but must be something else. Perhaps we should say that the pixels or plastic "serve as" or "implement" the pieces, or some such.

14 A further confusion possibly lurking in the progression from "milder than mild" to "industrial strength" realism is the suggestion that ontologies come in "degrees", arrayed along a single dimension. But I see no reason whatever to suppose that the respective ways of being ("reality") of intentional states, functional components, physical particles, chess pieces, everyday paraphernalia, works of art, institutions, people, and whatever else there is, form a one-dimensional series in any interesting sense.
This suggestion that objectivity is contingent on a commitment (eventually) to "give up the game", if it cannot be made to work in practice, is similar in structure and intent to Popper's proposal of falsifiability as the mark of the scientific; but it is, so to speak, a level up (ontological rather than ontical). Thus, Popper addressed his criterion to hypotheses (particular candidate bits of doctrine), thereby presupposing an already constituted vocabulary for expressing the hypotheses, and an already constituted methodology for testing them. A stance, by contrast, effectively is a vocabulary and a methodology, coupled with a demand for what will in fact be found—or, more to the point, what will not be found. Hence, what is up for rejection in case of failure is not any particular hypothesis but rather the entire constituted domain (at least in the current situation).

Understanding: Dennett and Searle

1 Reconciliation

I want to attempt here what may seem the impossible: to agree with both Dan Dennett and John Searle about the mind—or, at any rate, about intentionality. I don't mean agreement on every detail, of course; that would be too much to hope. Rather, the idea is to outline a view that accommodates (what seem to me) the most central and the most important of their respective insights and intuitions, at the expense of a few others. As it happens, the effort to achieve unity will entail the occasional point of disagreement with both of them, as well as the introduction of some exogenous material which I can only hope is compatible with what's already there.

We can begin with some obvious and acknowledged common ground. Dennett and Searle agree in regarding intentionality as an entirely natural phenomenon, and in their commitment to a scientific understanding of nature. Moreover, they are each materialists, at least to the extent of holding that (as a matter of fact, so far as we know) matter, suitably arranged and interacting, is necessary and sufficient for intentionality. In other words, two worlds that were materially identical would be mentally identical as well; but if you took away the matter, or sufficiently rearranged it, you would destroy all intentionality too. On the other hand, neither Dennett nor Searle is sympathetic to traditional physicalist reductionism. That is, neither holds out any prospect for strict definitions of mental or intentional concepts in physical terms.

Where they diverge, then, is in the way they characterize that "suitable arrangement and interaction" of matter, and hence in their accounts of which systems might have it, and how we can tell. The