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The Case for Qualia. Edmond Wright (Editor). Cambridge, Massachusetts: MIT Press, 2008, 384 pages, $38.00 paperback, $80.00 cloth.

Reviewed by Stephen E. Robbins, Fidelity National Information Services

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The Case for Qualia is an impressive set of nineteen essays, fascinating at the very least for the concentrated picture it presents of the complexity with which this subject now grows in the gardens of philosophy. The collection itself is wider than "just" the question of qualia, holding discussions of direct versus indirect realism, representationalism and consciousness, but all of these subjects are truly of a piece. Simultaneously, one will not find here a concentrated or consistent thesis on qualia, but the case for both the significance and the existence of the subject is consistently, unquestionably supported.

The subject that qualia denotes is profoundly important, in essence being the fundamental problem of perception, i.e., the origin of the *image* of the external world. Unfortunately, the participants in this debate nearly universally fail to grasp this formulation of the problem, a question that, starting with the Greeks, predates the qualia formulation by 2000 years. This is to say, they fail to grasp the problem itself. Therefore the elegant solution that has already been given has simply failed to register. It is disturbing then, but not surprising, to think that Editor Edmond Wright is, well, right when he warns in his introduction that an influential philosophical camp holds that the concept of qualia is passé. As we shall see, this cannot possibly be.

I present this review in three parts. In Part 1, I will briefly lay out the general metaphysic in which the debate on qualia has been unfolding. I term it the classical or spatial metaphysic. In Part 2, we will of course traverse the essays, and I will, if I can, relate them — the problems with which they grapple, the pitfalls they encounter — to this classic metaphysic. In Part 3, I will briefly sketch out a transformed metaphysic — a temporal metaphysic — along with the model of the origin of the image of the external world, with all its qualia, that this model entails. It happens to be both the metaphysic and the concrete model of the brain developed by Bergson (1896/1912), and it happens to be an approach to the subject neglected, with nary a reference, in the collection.

Requests for reprints should be sent to Stephen E. Robbins, Ph.D., Center for Advanced Product Engineering, Fidelity National Information Services, W126 N7449 Flint Drive, Menomonee Falls, Wisconsin 53051. Email: Stephen.Robbins@FISglobal.com

Part 1 —The Classical Metaphysic and the Problem of Qualia

The body and brain are embedded in, and integrally a part of, the surrounding material world, what I will call the field of matter. The classical metaphysic conceives of this material field as a continuum of points or positions. The motion of any "object" in this continuum is conceived to follow a trajectory or line, where the line itself consists of a set of points/positions. Each point successively occupied by the moving object is seen to correspond to an "instant" of time. Thus time itself is treated as simply another dimension of this abstract spatial continuum.

The continuum is infinitely divisible; a line in the continuum is infinitely divisible. Thus between each pair of points on an object's trajectory, it is always possible to insert another line, itself consisting of points. Since the two adjacent points are just that — static points, according to this treatment of an object's motion, to explain its motion between the two static points, we must insert a new, yet smaller line of points, beginning the description of motion by successively occupied points yet again. This is of course an infinite regress.

The end result of this infinite operation of division, even could we legitimately conceive of such an end, ignoring the mathematical hand waving of taking a "limit," would be at best a mathematical point. At such a point there could exist no motion, no evolution in time of the field. Further, as every spatially extended "object" is subject to this infinite decomposition throughout the continuum, then we end with a completely *homogeneous* field of mathematical points. The continuum of mathematical points then, both spatially and temporally, can have no qualities — qualities at the least imply heterogeneity.

That this is indeed the framework that the debate participants have tended to work within is attested to by a very common starting point, namely that the matter-field contains no qualities — objects have no color, there are no sounds, etc. Where, on the contrary, the existence of qualities in the field *is* affirmed, such participants (e.g., Strawson, 2006) have seldom, if ever, explicitly declared the metaphysical framework in which they now work, specifically their model of time and space. As we shall see, raising this framework to conscious awareness within the debate is crucial. That this framework is lurking behind the debate is betrayed also by the fact that the vast preponderance of examples of qualia, even for quality-in-the-field proponents, are static — the "redness" of red, the taste of cauliflower, the feel of velvet, the smell of fresh cut grass. Seldom are qualities of *motions* ever discussed, e.g., the "twisting" of leaves, the "gyrations" of a wobbling, rotating cube, the "buzzing" of a fly. This glaring lack is coordinate with the fact that an abstract "time" that is simply another dimension of the infinitely divisible space is equally completely homogeneous. Any "motion" in this space, logically, has no duration greater than a mathematical point, then another point, then another. In fact, then, the debate participants almost universally fail to realize that the perceived time-extent of these motions — the buzzing fly, the whirling of the coffee surface with circling spoon — are equally *qualities* that arise, just as problematically as the "static" colors of objects, in the homogenous time dimension of infinitely divisible instants in this continuum.

The brain, as noted, is integrally a part of this abstract continuum. Therefore, when objects on trajectories in the continuum we term "light rays" strike objects termed "eyes" in brain, the abstract, homogeneous motions of the external matter-field, all reducible in time-extent to mathematical points, simply continue in the portion of the field called the "brain." Nowhere in the brain, taken as part of the continuum, can there be anything but more homogeneous points/instants. There can be no actual

time-extent of motions through the nerves, no "continuity of time-extended neural processes" — the logical time extent of any neural process is never more than a mathematical point. Whether one conceives of these motions within the brain as maintaining some structural correspondence or isomorphism relative to the always past transformations in the external field, or whether one conceives of something more sophisticated such as processing invariants in this structure of field motions relative to the body's action systems, it changes nothing, Within the brain, taken as a part of this abstract, homogenous continuum, we can never derive qualities, whether of objects or of time-extended motions. We cannot explain how we see a cube "rotating" let alone a "red" cube. Therefore, all qualia are logically forced, within this metaphysic, into the non-physical, or the mental, or somewhere, anywhere but the abstract continuum. But the step by which this generation of events unto and into another realm can occur, *within the confines of the metaphysic*, remains a dilemma. The structure of the metaphysic makes the step impossible, while leaving the nature of realms outside the structure — e.g., the "mental" — forever incapable of definition or of use to the science which currently operates precisely within this metaphysic. Qualia, therefore is the symbol for this problem: What is the origin of the perceived qualities of the matter-field of the classic, spatial metaphysic?

Part 2 — The Essays

Wright — Introduction

Edmond Wright, in his introduction, contributes a sweeping historical overview of the notion of the "non-epistemic" (with its fairly recent shift to the term "non-conceptual"). Why the concern with the non-epistemic? Because the non-epistemic is identified with a *field of sensation*, e.g., a visual field of sensation. One can have vision of a room, yet pick out none of its objects. "It is the picking out of an 'item' that is the perceptual move; sensation is prior as it is from sensation-fields that 'items' are picked" (p. 7). This sense-field, for Wright, is one with qualia: "'Qualia'. . . applies generally to *all the sensory experiences across the differing sense modalities*, that is all 'sense-fields,' and *not to perceived items*. It is of these fields that it is claimed they have a non-epistemic character" (p. 7, original emphasis).

But firstly, the metaphysic is ever unforgiving here. The sensation-field, simultaneously for Wright a vision of the "unparsed" room, is a quality that has arisen from the abstract motions in the abstract, homogenous space and time. It is already a claim that an image of the external world has emerged. But it is a generation of another realm — fully mysterious and unsupported in this framework. The second problem, where Wright argues that qualia does not apply to "perceived items," I will defer for later, for it denotes both a general misconception on the nature of form and an unwitting enmeshment in the classic metaphysic that are common across all discussants, in this book and well beyond. Thirdly, on his characterization of the "perceptual move," well, Wright is wrong. There are texture gradients across the floor, the ceiling, the walls, specifying the receding distances. Is the room-vision/sensation-field experienced as a flat pancake against the face? Get up and move. The ratios of various objects' occlusions of these same texture units on the floor remain invariant as you move, specifying the size constancy of the objects. There is the tau ratio (Kim, Turvey, and Carello, 1993) specifying time to contact with these objects. This is all *information* — not "evidence" as per Wright — inherent in the light striking the retina, as to the

structure of the room and its objects and guiding action. Perceptual processing of these invariance laws is indeed involved in specifying this very room, undifferentiated as its objects might yet be. Though this is why Gibson (1966) rejected the notion of a sensation field as unnecessary, I accept Wright's fundamental intuition in this sense: the specification of the external field can be relatively unparsed, as when the motor mechanisms that support parsing a flow of speech sound into words are lesioned in an aphasia, reducing perception of the speech stream to a near undifferentiated flow (as indeed it was at birth). Nevertheless, and I will sketch this in Part 3, there is always some perceptual processing behind *any* specification. When *all* tracts from the visual to the motor areas were severed in monkeys, they went blind (cf. Weiskrantz, 1997).

I am not saying, by the way, that Gibson, *within the classic metaphysic*, explains the origin of the image (vision) of the room. He does not, though he understood the nature of the change required in terms of our concept of space and time (see the comments on the space and time of physics in Gibson, 1966). I will describe what is needed in Part 3. But the role of invariance laws in the transforming light/sound in the material field, and carried as well through processes in the brain, is essential to the answer. Yes, as Wright notes (p. 4), for Gibson, invariants exist in the light before perception takes place. To deny this is to deny realities in the external matter-field! Could one argue that these gradients do not exist across the floor? The brain is not interested in all the possible invariance laws that exist in the material world, only those which are relatable to the body's action systems. This is the significance of the feedback loops from the motor areas to the visual areas.

Consider simply the swinging of two short rods 180° out of phase, then study Kugler and Turvey (1987) and consider what is involved — the inertial tensors, the adiabatic invariance (frequency/energy ratio), the haptic flow fields. This is all information specifying the ongoing perception of the motion of the rods. In my opinion, consciousness theorists need to assimilate the findings of ecological psychology; it is as near a physics of psychology as one can get. The entire "inverted qualia" discussion (and its Zombies) would have died in an instant, as a fantasy, in the face of the concrete physical dynamics implied in the science (try explaining how one "inverts" the weights of the rods within the reality of the physical dynamics). We can ignore the science at our choice; but it impoverishes the discussion. In the general topic divisions below, I have used a partial re-ordering of Wright's own organization of the book, only preserving the "Attacks" section as a whole.

Indirect Realism, Direct Realism, and the Problem of Form

Indirect realism or eliminativisim are the only roads open within the classic metaphysic. If one is going to work within an explicit, new metaphysic, direct realism is barred. Quality can only exist (somewhere) *outside* the abstract space and time of the continuum, or not at all. In this framework, consistency demands that the defenders of qualia are both indirect and dualists. Direct realism and/or non-dualism will demand a step out of the classic metaphysic. Of a direct realist qualia defender, I will expect recognition of this fact.

Riccardo Manzotti (*A Process-oriented View of Qualia*) is the one voice that envisions a new form of realism. He opens with his opinion that at the root of the problem of qualia is an incorrect assumption, namely the separation between subject and object. In other words, the problem is the metaphysic. Bergson both stunned and drove me over 40 years ago to grasp this statement: "*Questions relating to subject and object, to their distinction and their union, must be put in terms of time rather than of space*" (1896/1912,

p. 77, original emphasis). The ubiquitous discussions of intentionality, as a psychologist, leave me cold, appearing brutally sterile, all somehow failing to truly grasp this fundamental question of the relation of subject and object which is at stake.

Manzotti traces the origin of what I have defined as the classic metaphysic to Galileo. Galileo's crucial step was to suggest that the real world is made only of *quantitative* aspects, while other empirical aspects — the qualities of the experienced world — are somehow created by "the living organism." Implicit within Galileo's statement is the distinction between primary properties and secondary properties, the former related to quantity and "real," the latter related to quality and only in the mind. It is stunning, as Manzotti shows, to see this exact structure in the statements of Dennett (yes, the theorist of intentionality), Jackson, Gregory, and others writing today.

I resist the temptation here to spend much time with Manzotti. Taking his cue from Whitehead's process philosophy, he explores the conception that a quale is a physical process spanning time and space, beginning in the environment and ending in the brain, with no spatial distinction between subject and object. I only note that left implicit in this statement and view is a redefinition or model of time that must be made very explicit, and secondly, the question of how the image of the external world arises over this time-extended process is in fact left untouched. The light rays from the buzzing, green fly travel to the brain, become encoded in the neural world of the brain, looking nothing like the fly and yet — whether the process is time-extended with no spatial distinction between fly and brain or not — transform completely mysteriously to our *image* of the fly as it buzzes, and did so in the *past*. How?

Harold I. Brown (*The Case for Indirect Realism*) initiates the indirect defense. It is the subject of color that as usual is the apparently fertile ground of problems for the direct position, and which indicates that the resulting experience, while holding similarities to the input, is far from numerically identical, i.e., there is no simple mapping from physical properties to the experience — we have the metamers, the unique, the binary and opponent colors, etc. The indirect stance provides an ontological status to the phenomenal appearance — which is to say, a realm outside the classic metaphysical structure.

Nevertheless, as Zeki (1993) argued, there are invariance laws in this array of colors in the environment under the ever transforming light, and the brain is working mightily to utilize these laws to isolate these invariants, to maintain constancies and to specify colors in the ever changing external field. This perceptual work was already reflected in Wright's room/sense-field as well, else it is a colorless nothing. And as I have pointed out (Robbins, 2004a), all *form* as well is subject to precisely the same statement — there is no simple mapping of properties to the perceived form. A rotating wire cube, under a strobe that is out-of-phase with the cube's symmetry (invariance) period, becomes a wobbly, plastic, non-cube. An ellipse, rotating at sufficient speed, does the same, becoming a non-rigid figure. Thus form itself is equally an issue of qualia and equally and unquestionably a function of invariance laws and constraints applied to ever changing fields, in this case velocity flows. I have argued therefore (Robbins, 2007) that both form *and* color can and should be viewed under Gibson's concept of "specification." Note that given the complexity of the invariance laws, it already must be far from a naïve realist's specification of simple properties. The question, again, is what metaphysical transformation is necessary to support the directness of this specification, and escape being forced to the indirect position demanded by the current metaphysical framework.

Consistently, then, William Robinson (*Experience and Representation*) argues that when we do a full accounting of the processes that occur when one sees a red apple,

we must accept that qualia as events are non-material, a view he terms "qualia event realism." But why settle for the ever-static apple with its "redness" as the problem? Let the apple be rotating. Now you will see that the physicalist, in his metaphysic of infinitely divisible instants, cannot even explain the perception of the "rotating," for he cannot explain the origin of the time-extent of the perception — he has no possible theory of the memory that can support this.

Change the apple to a buzzing fly. At the null-scale of time in our continuum —the most infinitesimally minute of point-instants — the fly looks nothing like our normal perception. As a function of the concrete dynamics of the brain, to include its underlying chemical velocities, the brain is always imposing a scale of time. As we alter these velocities the fly transforms — from an undifferentiated phase of the material field, it becomes a motionless, crystalline vibrating form, then becomes a heron-like fly flapping its wings, then the buzzing fly of normal scale. This too is a transformation of qualities. *Scale implies quality*. This too the physicalist must explain. Because the qualia defenders themselves are tied to the static, abstract space that pervades our thought, they too have not begun to lay the actual problems on materialism, as currently defined, when we bring in (concrete) time.

So when Robinson (2004) ties the problem of qualia to consciousness, arguing that the physicalist who ignores the explanatory gap leaves materialism, ". . . an empty shell whose only virtue is that it is not self-contradictory," (p. 250) with tongue in cheek, I cannot concur. The metaphysic is not even consistent in its ability to explain form.

C.L. Hardin's piece (*Color Qualities and the Physical World*) is an absolute feast of color findings, all developing the compelling conclusion that there exist, in our abstract continuum, no simple physical properties or combinations thereof that map to our experience. The discussion of the vast individual differences being unearthed and the impossibility of defining any ideal observer (upon which mapping theories like to rely) is further enlightening. In this, I am reminded of Elsasser's (1987) thoughts on individual differences in heredity and memory used in Elsasser's own conclusions on the impossibility of a mechanistic model of memory.

The picture being created by these qualia theorists is startling. We are presented, everywhere beneath our colored world of experience, with what can only be described as massive, unending, continual flux in the physical world. There is no fixity, nothing fixed for the brain to latch on to, only a flux from which it attempts to derive some semblance of constancy, yes, some *invariance*, though even how this is achieved may vary across various individuals. The Isabelle Peschard and Michel Bitbol essay (*Heat, Temperature, and Phenomenal Concepts*) will only add to the dimensions of this flux with its compelling analysis of temperature and heat, and again, the same problem of any simple mapping.

But this picture is only surprising if we are mesmerized by the classic metaphysic with its inherently static view of time and with its static "instants." Physics, as I have pointed out, is sending cracks throughout this metaphysic (Robbins, 2004a, 2007). Lynds (2003) now argues that there is no precise, static instant in time underlying a dynamical physical process. If there were such, motion and variation in all physical magnitudes would not be possible, as they (and the universe itself) would be frozen static at that precise instant, and remain that way. Consequently, at no time is the position of a body (or edge, vertex, feature, etc.) or a physical magnitude precisely determined in an interval, no matter how small, as at no time is it not constantly changing and undetermined. The inherent *uncertainty* introduced by this unceasing flow of time is the inescapable tradeoff required for the universe to change. All equations of motion, Lynds argued, are subject to this fundamental uncertainty. This is why Galileo,

as he initiated the classic metaphysic, was even wrong when he assigned shape or form to his quantitative continuum, while thinking he was excluding qualities therefrom. There is nothing static in the ever-transforming material field. Edges, vertices, or surfaces do not exist in an instant. Nor color. There are no "instants." The brain, simply a part of this transforming flux, cannot use in its computations what for it does not exist. Even form can only be derived by imposing constraints (invariance laws) over ever flowing velocity fields.

"Form is only a snapshot of a transition," said Bergson (1907/1944, p. 328). The eyes are continually in motion. Objects eventually disappear when, in experiments, the position of the object is fixed relative to retinal motion. The brain is at a loss in a static world. The brain is, and is embedded in, an ever flowing material field; it is tuned to this fundamental aspect of reality, and form is obtained by the application of constraints across these flow fields — information inherently uncertain due to the non-fixity. Thus, Weiss, Simoncelli, and Adelson (2002) argued, in developing a Bayesian model based on velocity flows, that form is always an *optimal* percept, based on the best available, but inherently uncertain, information. In essence, even the most veridical of forms is simultaneously an illusion, but yet the best partition of the transforming field the brain can offer.

The misconception of static form, derived from the classic metaphysic and Galileo's misassignment of form to the mere "quantitative," underlies the qualia debate participants' failure to grasp that the issue being addressed is the problem of the origin of the *image* of the external field. The misconception is harbored by virtually all in the debate. As noted earlier, for Edmond Wright, ". . . qualia does not apply to perceived items." Martine Nida–Rümelin (*Phenomenal Character and the Transparency of Experience*) states it clearly in her essay. She feels forced to differentiate between color as an "appearance property" and shape, which she says is not such a property. All seem to think that the origin of the image of the *forms* of the external world is no problem — these are easily "computable" and hence the image itself is no problem, only its "qualities." They fail to grasp that the origin of the image of the forms in the field and of the objects in the field is just as much a problem as the (other) "qualities" of the field — the "rednesses," the "velvets," etc. *None* of these is simply computable. At the null scale of time, the material field, in its massive, continuous dynamic flux, looks nothing like the *image* we have of it at normal scale. The "buzzing" fly of our scale is simply a mass of shivering field oscillations. Technically, the field, at its null or natural scale, is non-image-able. *It is the origin of our image of this field, any image, that is the problem.*

Therefore, it is again the question: Are we forced to leave qualia therefore in some other realm, unreachable by science, but loved by the indirect realist? Or is it the simply a false metaphysic that physics itself is destroying? Is a more sophisticated direct-realism possible?

John Smythies (*The Ontological Status of Qualia and Sensations: How They Fit into the Brain*) does not consider this a possibility. As he recounts findings of Hardin's sort above and offers others such as the phases of recovery from blindness or the action of saccades (during which there is no information to specify the world), he asserts that these are the death knell for direct realism, that is, I note, for a direct realism construed in the classic metaphysic. (I have discussed how Smythies's saccadic motion problem falls out in the Bergson/Gibson model of direct realism [Robbins, 2006a, 2007].) His pointing to the problems for materialist mind/brain identity theory given by these phenomena is certainly apt; the implications of qualia research must eventually force the materialists, currently on top of the theoretical hill, into an untenable position.

But Smythies's route to claiming, for the indirect realist, the top of this about-to-be-abandoned hill has little hope. Noting the television raster painting technology,

and simultaneously (somewhat) admitting the fact that nothing like a picture area can be seen emerging in the processes of the brain, he opts for the possibility that the picture is painted in another "space." This is just the old metaphysic with a new space bolted on. Why this picture is now conscious, or how it is ever painted, will remain inexplicable. Further, as earlier indicated, indirect realists have yet to grasp the problem of time-extended perception — "twisting" leaves — and therefore the problem of the memory supporting this. It is far from trivial; no theory exists in psychology that even addresses this, as Gibson (1975) famously noted. The "virtual" in the virtual reality features of television technology that Smythies also thinks significant, already existed long ago in Bergson in a sophisticated way (Robbins, 2001, 2004b).

Resonances to the Frame Problem

George Graham and Terence Horgan (*Qualia Realism: Its Phenomenal Contents and Discontents*) engage in a detailed defense of the reality of qualia. Unfortunately, they begin with the statement that, for them, qualia are "narrow" in this sense: "They are not constituted by anything 'outside the head' or in the external environment of the conscious person" (p. 91). This is a pure reflection of the classic metaphysic. But in truth, it is even inconsistent within the classic metaphysic, for the abstract motions in the abstract space in the abstract time simply continue in the brain. How could qualia arise there, but not the external field? But in Graham and Horgan's extension of qualia to agency or the experience of directing the body and acting, and to cognition and thought, I heartily concur.

This very extension is taken up by Matjaž Potrč (*The World of Qualia*), exploring these cognitive dimensions of qualia, where, as opposed to a logic of exception-less rules, qualia are seen as a "glue" for transitions from one cognitive state to another. The "background," he argues, is critical here, and one is aware of transitions taking place within this, not by being aware of specific contents, but by the *quality* that is proper to their passage. This background, as Potrč defines it, is "everything the cognitive system has stored that sits in back of its memory" (p. 122). There is great merit here in this topic, though the discussion would have benefited immensely by descending at least occasionally from the realm of high abstraction to concrete examples. The topic, as Potrč realizes, is clearly related to the frame problem, and we can cast it concretely in terms of a concrete event: picture a robot stirring a cup of coffee. Suddenly the cup begins bulging in and out or begins hovering above the table, or the coffee begins emitting "snap, crackle, pop" sounds, or the spoon feels like a feather or begins melting, or the liquid medium now resists motion like cement, or the surface swirl begins moving in the opposite direction or erupting with numerous small geysers. In theory, the robot has been checking his massively long list of frame axioms, instant by instant, to determine whether these are expected features of his world. This search is considered intractable and finding a method to defeat it is precisely the frame problem. But is there a better way? Do we not detect any given one of these anomalies instantly as though it were a very concrete "interference" or *felt* non-resonance — a dissonance — with past experience? The former method (frame axioms) is characteristic of a syntax-directed processor, the latter of a *semantic-directed* processor (Robbins, 1976, 2002).

The problem of qualia, then, is intimately bound with the definition of an entirely new, broad form of computation and computing device — a semantic-directed processor. Cognitive science, to this point, in all its variants, whether connectionist networks, symbolic processing, or quantum computers — is inescapably syntax-directed. Syntax is simply another aspect of the abstract space; it can be defined as

rules for the concatenation and juxtaposition of objects (Ingerman, 1966). It is a purely spatial operation whose results are invariant both to the scale of time and to the concrete flow of time. The result of the rewrite rule, S => NP + VP, is unchanged no matter how quickly or slowly it is processed, i.e., at any time-scale it is executed. But the scale of time in actuality determines, for us, a buzzing fly or a heron-like fly. In the flow of concrete time, striking the same note, middle C, ten times successively, nevertheless builds a *quality*, for each succeeding note *is the reflection of the preceding series*. The tenth note is not the same as the first. Hold one of the first seven notes of "Twinkle, Twinkle Little Star" slightly longer than normal, the quality of the entire phrase is affected. None of this can be captured in (spatial) syntactic rules. In Bergson's great "dichotomies" we have, on the one hand, abstract time, abstract space, and quantity, and on the other, concrete time or duration, spatial *extensity* (a continuum with no discrete elements), and quality. We can align syntax with the first group, and with the second, semantics.

We will not move beyond syntax-direction unless theory is willing to enter the realm of concrete events with ecological psychology. The coffee stirring event is riddled with invariance laws existing over our experiences of this event — the radial flow field of the swirling surface, the constancy of the cup's form and stability on the surface, the inertial tensors and adiabatic invariance of the spoon wielding, the characteristic "clink" coordinate with the spoon's motion and on and on. This is the background comprised by our many experiences of coffee stirring, all which must be "stored" for this invariance to be defined across. An anomalous stirring event contains enough of this invariance structure to act as a redintegrative cue, but the "snap, crackle, pop" also instantly violates this structure of invariance (Robbins, 2002). Hence the felt, experienced, instant "dissonance." And how is all this necessarily time-extended, qualia-riddled experience stored? Contemporary cognitive science and memory theory with their symbolic processing and/or connectionist nets have not a clue. There can be no clue on how to store experience if there is no theory of *experience*, namely perception (the image of the external world), in the first place, which is again the hard problem (Robbins, 2006b, 2008, 2009). This problem of memory is equally a mess arising from the current metaphysic. There has only been one truly alternative model — Bergson's — and it is ignored. But without a theory of the storage and retrieval of this background of experience, efforts such as that of Potrč float in a void.

Time is the point where the hammer strikes and splits the philosophical rock. It is simply surreal that time is so resolutely ignored in the qualia debates.

Other Qualia Defenses

E.J. Lowe (*Illusions and Hallucinations as Evidence for Sense Data*) is concerned to defend the sense datum position via illusions, particularly concentrating on double vision, in fact the double vision of one's finger. Gibson, of course, emphasized with many examples that illusions are functions of insufficient or conflicting information, and therefore inadequate specifications of the external field. This is a theory largely ignored by philosophy. If *all* perception, even the most veridical, is only an optimal specification via inherently uncertain information, illusions are not the pivotal cases indirect realists suppose. If a particular illusion is a function of memory experience, the comments above on the state of memory come into play, for the theory of memory will be quite different when there is an actual theory of perception.

Robert Howell (*Subjective Physicalism*) is one who argues that the existence of qualia does not imply the falsity of materialism, and attempts to reconcile the two.

All things, properties and facts are physical, he argues, but no objective theory can completely describe the world, and experiences are simply "not identical with any property mentioned in a completed physics" (p. 126). This is an interesting gambit and perhaps true, but there is no attempt here to escape the fundamental metaphysic in which science currently works to view the physical world. Nor does it provide us any point of purchase in solving the gap, i.e., how a qualitative image of the external world arises from any given physical architecture, be it neural nets, computers or brains.

"Attacks" (Critiques) on the Opposition

The Churchlands' eliminativist program is marked for elimination by Mark Crooks (*The Churchlands' War on Qualia*). The echoes of the metaphysic ring clear in these Churchlands — "buzzing neurons" compute the spatial position and trajectories of perceived objects — connectionist models work quite happily in the abstract time of the metaphysic. Crooks notes that there is no phenomenology manifest in such a neuro-computation, nor could there be as it has been axiomatically excluded, and yet, throughout the theory, Paul Churchland liberally cites phenomenological descriptions/correlations (size constancies, ambiguous figure reversals, etc.). Crooks effortlessly penetrates the contradictions here along with displaying the illusory nature of Patricia Churchland's promissory note of reductions from one level of description (theory) to another, reductions with no actual precedents in the sciences.

To amplify Crooks a bit, I have noted already that these network models, so loved by the Churchlands and based in an abstract time of instants, are unable to support time-extended perceptions (the spoon stirring coffee), but it is also little understood that these networks are inadequate to capturing what I have termed the *invariance structure* of these events — the set of transformations and invariants that specify an event and render it a virtual action — as in the coffee stirring case. As it implies that connectionism is ignoring ecological psychology, connectionists do not wish to hear this critique (cf. Robbins, 2008, for a glimpse; Robbins, 2004a holds in effect an extensive critique of connectionist form recognition). Yet this too — the underlying structure of events — is part of the phenomenology that the Churchlands and the connectionist models discard — or surreptitiously invoke. Qualia theorists are not exempted from this.

Barry Maund (*A Defense of Qualia in the Strong Sense*) is concerned to parse out senses of qualia, ultimately to defend a strong sense. A neutral sense, it is said, accepts that there is an introspectively accessible "something it is like" aspect to experience. In the strong sense, qualia are not only those qualities that constitute (or explain) phenomenal character but are introspectively accessible, intrinsic or non-intentional. But I fear I cannot delve further into this discussion. In the classic metaphysic — the homogeneous space and the abstract (caricature of) time — it is impossible for *any* quality to arise — strong, medium, neutral, weak, or ultra-weak. Galileo stripped the material world of quality at the formal inception of this metaphysic. As far as I know, the brain is fully a part of the material world. Bergson (1896/1912) saw the implications lucidly 100+ years ago. As noted above, technically, the material field, at its null or natural scale, is *non-image-able*. Every point/event in the field is influenced by and reflects actions/forces from the whole. This infinite influence cannot be *represented*. Thus, our notion of the material world is necessarily an image, said Bergson, i.e., inescapably only a part, a limited representation, of the whole. The atoms of the material world are an image. The brain is an image. Its atoms are an image. How does one such image —

the brain or its atoms — obtain a privileged position, gaining the power to represent the other images as image? But this is precisely what we let the representationalist do. The brain, equally a part of the abstract, homogeneous space, now described by whatever abstract image one chooses — atoms, molecules, neurons — is given the inexplicable power to create an image of the external material field, an image now necessarily qualitative, with time-scale and time-extent, a qualitative image that now by definition must reside in some ever-mysterious realm outside the abstract, homogeneous space. It is a crass psychophysical parallelism (cf. Bergson's critique on this, 1904/1920), and the current debates on the subtleties of this inexplicable realm, I am afraid, would impress even the scholastics.

Knowledge of What?

Howard Robinson (*Why Frank Should Not Have Jilted Mary*) examines Jackson's knowledge argument and his recantation in detail. I will neglect any detailed comment. The problem I have always had with this subject is the premise that, "Mary has gained scientific perfection in her knowledge of the process of seeing." It is doubtful that Jackson has insight as to what this correct scientific model actually is. If, as I sketch in Part 3, the brain acts as a very concrete reconstructive wave specifying a past-extent of the motion of the external material field, then there is no room in the brain at all for representation as currently construed, at least by the concrete models of the day — connectionist or symbolic manipulation models of the brain. If representationalism has no purchase in the brain, then the entire question of Mary's achieving a knowledge of the external world via representations collapses.

Torin Alter (*Phenomenal Knowledge without Experience*) is also focused on attacks against the knowledge argument, particularly on Dennett's RoboMary. He argues, I think inescapably, that RoboMary in fact uses her knowledge to program herself into a state that supports the actual phenomenal experience of color. This fails to impact the knowledge argument at all, for it is not at all an inference from physical facts (representations). This inference possibility of course is exactly what Dennett must defend, for his computer model of the brain lives or dies with the possibility of supporting the perception of the external world via representations, that is, via pure syntax-directed processing. But then, as he also tries, one can escape this by denying phenomenal perception at all, which of course brings us back to the fight for qualia.

Transparency of What?

Amy Kind (*How to Believe in Qualia*) takes aim at the transparency thesis. This view holds that our experience does not reveal the existence of any qualia, for our experience is transparent — when we attend to our experiences, our attention goes right through to their objects. Michael Tye (as Kind notes) has us focus attention on a painted blue square. There seems no way to divorce attention from what the experience is about — a blue square — rather than, say, just a blueness. Such a position tends to be taken as reducing the qualitative content to simply the intentional content of the experience, not that this formulation does a blessed thing to further our understanding of the origin of the qualitative image of the external world and its inherent, intentionalist problem of subject (perceiver) and object (square).

Kind does a excellent job with counter examples — from blurred vision to orgasms to pains — that leave us wondering what the object of this "aboutness" could possibly

be, and establish the qualia of experience as existing in its own right. Yet I am struck by the same old metaphysical engine that got the argument going in the first place — ". . . right through to their *objects*," as though, again, we have made it (whew!) safely by this phrase to a nice static object where there is no quality, where form is not quality, and time is forgotten. But let Tye use a spinning wobbling cube of blue. Set it spinning so rapidly its edges form a fuzzy haze. Is this poor object (motion) not a quality as well? Do we now divorce motion (as a quality) from the object? Even here, this distinction of "objects" in "motion" is a function of the abstract space. On another view, we shall see, the motions of objects are but *changes or transferences of state* in the transforming whole of the material field.

Continuing the transparency attack, Diana Raffman (*From the Looks of Things: The Explanatory Failure of Representationalism*) states that the representationalist presents a "credible materialist story" of how perceptual experience represents or gains its intentional content, say, by covarying with properties in the world. The problem, for her, is that the representationalist does not explain how we can be aware of that content (red apple) without being aware of the intrinsic feature of the experience (redness). But the materialist, when consistent within his metaphysic, has no possible explanation of the origin of the image — apple or red apple (I refuse to use that ugly, static term, perceptual content). Arguing about subtleties within a basic unreality is unlikely to be productive.

This brings us to Tye again and John O'Dea's (*Transparency and the Unity of Experience*) analysis of Tye's theory of the unity of experience. The great question is, supposedly, how do we get several experiences — the visual, the auditory, the tactile — to come together as one experience? I refrain from entering O'Dea's excellent philosophical critique here, for I am simply stopped. Gibson (1966) laid the scientific foundation for this debate over forty years ago. Take a comb, he said, and run your finger across its teeth — the visual wave of teeth snapping back into position and the spaced staccato sounds are abstractly equivalent information. Ecological psychology has continued this quest for the coordinate information (invariance) across the modes of an event, for example, the abstract equivalence of the optical and auditory information released by the breaking of a bottle, or, when pouring liquid into a glass, how the rate of increase of the pitch of the sound as the glass fills is an invariant specifying the (visual) time it will take for the cup to fill to the brim (Cabe and Pittenger, 2000). The brain must be using such information to specify the total experience in its unity. I do not see how these discussions proceed ignoring the science.

Finally, Edmond Wright (*Why Transparency is Unethical*) treats us to an unusual slant on the "ethics" of transparency, leaving us at the end with a quote from Hume: "Does it commence from conviction — and not with faith — that singular entities pre-exist our selection of them? . . . Yes. Then commit it to the flames . . ." (p. 360). Wright may be pleased to know that for Bergson, ironically, this very faith in separate objects inherent in the classic metaphysic originates in perception, the very thing we are trying to explain, for it is our perception that takes the task of partitioning the transforming field it is initially presented at birth into objects and motions at a specific scale of time, for the sake of presenting objects upon which the body can act — to lift a "spoon," or slap a "fly." This partition is unfortunately eventually rarified in thought to the abstract space and abstract time of the metaphysic, and then projected back, sadly, as an explanatory structure, upon perception itself. In the most absurd case, we end in eliminativism! Yes, this primacy of perception is echoed, with far less precision or awareness of scope, in Strawson's (2006) insistence on the basic priority of the experiential over the non-experiential.

Wright also wishes to take the powerful case built for qualia and place it within an indirect realist model of the brain. Like Smythies, he appeals to the television analogy, but unlike Smythies, he does not posit a picture of the world arising in some other "space." Rather, he is correctly at pains to insist there is no picture in the brain. He emphasizes that there is "differential correlation" between the transforming external field and the processes of the brain. He recognizes that beyond just a passive covariation, there is some modification going on (e.g., edge enhancement), though I think it safe to say that in the computation of invariance for specifying color, form, sound and yes, swinging rods 180° out of phase, there is far more going on — differential correlation is an impoverished, probably useless, description.

So, for Wright, within this changing "neural matrix or raster" in which there is no pictorial resemblance, yet the phenomenal world has come together, as a coherent set of changing pixels on the television screen (his sense-field) upon which we now happen to parse objects, people, or the white coffee cup with swirling surface and circling spoon sitting on the table. But this is no better than Dennett's plea for the same problem — then in the context of the changing bits of his computer architecture — that with enough imagination, "we can get there from here." Why should Wright escape Crooks's critique of the Churchlands' buzzing neurons? There is no clue in Wright's description, despite his strong assertions, on how the phenomenal event of the coffee stirring exists within his neural matrix. There is an underlying, implicit move that says the "pixels" have come together as a coherent changing group (they are not and cannot be spread or grouped randomly here, there or everywhere even on our TV screens or we would be hopelessly confused). This coherent group is correlated with the coffee stirring event in the external field. This hidden move is aided and abetted by the simplistic (if any) view of invariance processing hiding in the impoverished concept of differential correlations. There is no theory of the memory that supports the time-extent of the spoon's stirring, for at bottom, this neural processing, with its implied coherent motions of quasi-digital pixels, yet takes place in the abstract space and homogeneous time of the classic metaphysic in which the appearance of quality, despite Wright's faith, is inexplicable and by definition, impossible. No, the problem of qualia is not well served by indirect realism, and qualia definitely should not be considered leashed to this philosophical stance.

Part 3 — The Temporal Metaphysic

The treatment of motion in the classic metaphysic, an ever lurching from position to position across the infinitely divisible space, is an infinite regress. Bergson argued that this space or "principle of infinite divisibility" is at the core of all of Zeno's paradoxes. The steps of Achilles are forever halved; he never catches the hare. The arrow, ever correlated with a static position, "never moves." Bergson argued that we must treat motion as *indivisible*. Achilles moves in an indivisible motion, he indeed catches the hare. The arrow's motion is indivisible, it never occupies a position. In physics, this view is now emerging at Nottale's (1996) insistence, building on the proof of Feynman and Hibbs (1965) that the motion of a particle is continuous but *not differentiable*, that space-time be viewed as *non-differentiable*. The essence of differentiation — for a motion from A to B or the slope of a triangle — is division into ever smaller parts. We have seen Lynds' (2003) variant of this view.

In the abstract continuum, the motion of any object is relative — I can move the object over the continuum or the continuum beneath the object. Motion now becomes rest or *immobility* purely on perspective. But in the material field, there must be *real* motion —

trees grow, stars explode, coffee is stirred. The field must be viewed as a globally transforming whole. Within this global, indivisible motion, the "motions" of "objects" become *changes or transferences of state*. Bergson's positive characterization of this motion is that each "instant," like a note in a melody, permeates and penetrates the next, where each instant (note) reflects the entire preceding series — an organic continuity. In this characterization, unlike the equations of the classic metaphysic, time is clearly irreversible. This indivisible or non-differentiable motion forms an elementary property of *memory* in the field's motion — each (now past) instant does not cease to exist as the next (the present) instant appears. It is this "primary memory" — an attribute of the time-evolution of the material field— that supports our perception of "stirring" spoons, "twisting" leaves, "rotating" cubes. Quality is now inherent in this motion of the material field. At the null scale of time, the field is near the homogeneity envisioned by the classic metaphysic, but at ever larger scales of time where the oscillations of the field (e.g., the 400 billion/sec oscillations of the field as a "red" light wave) are compressed in the experience or glance of a moment, we obtain ever differentiating quality.

Bergson realized in 1896 that this field is holographic — the state of each point in the field is the reflection of, carries information for, the whole. Noting that there is no "photograph" of the external field developed in the brain, he stated, "But is it not obvious that the photograph, if photograph there be, is already taken, already developed in the very heart of things and at all points in space. No metaphysics, no physics can escape this conclusion" (1896/1912, p. 31). But, as opposed to Pribram (1971), the brain is not simply a "hologram." Rather, to place Bergson's view in modern terms (Robbins, 2000, 2002, 2006a, 2006b, 2009), the brain is the modulated *reconstructive wave* "passing thru" the external, holographic matter-field. This brain-embodied reconstructive wave is specifying, always, an image of the *past* motion of the material field — a buzzing fly, a rotating cube. The fly's wing-beats being specified have long gone into the past, but the indivisible motion of the field supports this past-specification. The image is right where it says it is — in the field. It *is* the field — the past of the field — at a specific scale of time. The brain dynamics supporting the specification determines this scale of time. The chemical velocities underlying these dynamics are responsible for this. Begin increasing these velocities (equivalently, the energy state) significantly — the fly transitions, as noted earlier, from a buzzing fly, to a fly barely flapping his wings like a heron, to a motionless being, to a vibrating, crystalline structure, and so on. Again, scale implies quality. We have specification of a qualitative field at a scale of time. This wave, specifying a portion of the field, need not cease during saccades.

The continuous modulation of the brain (as a wave) is driven by the invariance structure of the external events, e.g., the velocity flows defined over the sides of the cube as it is rotating conjoined with its recurring symmetry period. Due to the continuous motion of the field, this information is always inherently uncertain — we have always an optimal specification of the past motion of the field. In holography, a reconstructive wave, passing through a hologram and successively modulated to different frequencies, successively *selects* information from the multiple, superimposed wave fronts originally recorded on the hologram, and successively specifies each — a toy ball, a cup, a truck. If modulated to a non-coherent (non-unique or composite) frequency, it specifies a fuzzed superposition of the three. There is no "veridical" selection. So too, the brain, as a reconstructive wave, is selecting information from the transforming matter-field, where the principle of selection is based on information (invariance) relatable to the body's action systems — hence the intimate feedback to and from its motor areas. In Bergson's succinct phrase, *perception is virtual action*. The

heron-like fly slowly flapping his wings is also a specification of the action possible to the body at this new scale of time, in this case, modulating the hand to leisurely catch the fly by the wing.

Given the holographic properties of the field, where the state of each point/event reflects the mass of influences from the whole, simultaneously therefore a state of very elemental awareness of the whole, and given the field's indivisible motion defining a primary memory, there is implied, at the null scale of time, an elementary form of awareness defined throughout the field. This is a field property. It is not elementary "constituents" with ad hoc intrinsic and extrinsic properties that must be "composed." This is the old metaphysic, spawned from perception's derivation of objects and motions, still speaking. The specification, then, is simultaneously to a time-scale specific form of this vast, taut web of awareness at the null scale. This mode of specification holds for frogs, for chipmunks, and for humans. At the null scale, there is no difference between subject and object. Run the scaling transformation in reverse. The fly transitions — initially waves in the field undifferentiated from the perceiving subject, it becomes a crystalline, vibrating being, then becomes the motionless fly, then the heron-like fly slowly flapping his wings, then the buzzing fly of normal scale. Subject is differentiating from object. This is the meaning of Bergson's statement on the relation of subject and object in terms of time, not space. This is the foundation of intentionality.

The body/brain as a modulated reconstructive wave passing through a holographic universal field, specifying a virtual image of the past motion of the field's non-differentiable motion, and reflective of possible action at a scale of time — this is the beautifully elegant solution of the universe to the problem of specifying an image of the external world for its living organisms. Nearly fifty years before Gabor, this was Bergson's incredible insight.

The Case for Qualia traverses a deep subject, critical for our theory of mind and man. It is a case, a set of essays, that should be studied. The above is a sketch, only a sketch, to illustrate for the participants in this qualia discussion that it is unproductive to continue to neglect time, to ignore Bergson, to underestimate Gibson, or to harbor notions that the syntactic connectionist and symbolic manipulation metaphors, given their failure to capture anything like a concrete dynamics, are remotely meaningful to the discussion. Simultaneously, it should be understood, and factored into the debate, that a sophisticated direct realism *is* available, one that intrinsically supports qualia, within a metaphysic that respects the nature of time.

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