

Bernard J. Baars

## *Reply to Commentators*

I am grateful to all my commentators, but particularly to Mrs Julie Vargas, B.F. Skinner's daughter, who takes this opportunity to set the record straight about her father. I accept her personal testimony without reservation. Some specifics are discussed below.

My difference with B.F. Skinner is scientific, in that I think he was crucially wrong to reject consciousness as a scientific topic; and cultural, in that I believe that radical behaviourism and its philosophical cousins have had a profoundly alienating influence in the world at large. Anti-subjectivism helped split us into two rival cultures of science and art. That split may have aggravated a widespread sense of human alienation in the twentieth century.

Skinner's own words show him to be very much aware of the richness of his inner experiences — so that, in effect, he led a double life. His inner conflict is plainly shown in the heated arguments between Burriss and Frazier in *Walden Two*, representing two aspects of Skinner, as he told us so clearly in his own words. To say that is not disrespectful; it is merely listening carefully to his words. It is also entirely consistent with Skinner being a loving and supportive parent while advocating a complete scientific rejection of the conscious life.

### **Dennett's Defence of the Double Life**

Some commentators do not question this kind of evidence but offer a defence of Skinner's double life.

Daniel C. Dennett in particular seems to concede the facts of the case. He tells us, 'As Baars notes, Skinner himself was too smart and self-observant not to be ambivalent about his own too-radical behaviourism.' Yet Dennett seems to evade the logical conclusion — that we have wasted a century chasing after an absurd and self-contradictory phantom of objectivity, symbolized by Skinner's own inner conflict. Dennett defends anti-subjectivism:

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It is remarkable that Baars can claim that ‘many scientists now feel that radical behaviourists tossed out the baby with the bathwater’ while not being able to see that his own efforts threaten to be an instance of the complementary overshooting — what we might call covering a nice clean baby with dualistic dirt.

But if so, then Dennett himself must be my partner in crime. Just last year he wrote:

Theorists are converging from quite different quarters on a version of the global neuronal workspace model of consciousness. . . . On the eve of the Decade of the Brain, Baars (1988) had already described a ‘gathering consensus’ in much the same terms: ‘Consciousness,’ he said, is accomplished by a ‘distributed society of specialists that is equipped with a working memory, called a global workspace, whose contents can be broadcast to the system as a whole’ (Dennett, 2001, p. 42).

While I am grateful for Dennett’s support for global workspace theory, his image of ‘dualistic dirt’ leaves me puzzled. Each year more than 1400 empirical articles use the word ‘consciousness’ in the biomedical literature alone (Baars, 2002b). That number has risen steadily from slightly more than zero in 1950, the height of behaviouristic power. None of this scientific literature is flawed by ‘dualistic dirt’, as far as I can tell. I have not heard Dennett condemn a single empirical study for creeping metaphysical pollution. At what point does ‘dualistic dirt’ come in?

Dennett does not seem to see the devastating price we have paid for a century of anti-subjectivism. For fear of metaphysical muck we have simply thrown out the wealth of conscious phenomena that were well known to William James and the nineteenth century. An extraordinary humanizing treasury of insights was purged, and along with it the possibility of a scientific psychology that was equally humanizing. Compared to James’ *Principles of Psychology* — filled with fact after fact about consciousness — the twentieth century was a great and unutterably boring desert. Behaviourists purged science so thoroughly that the greatest work of psychology in English became taboo. Human beings were reduced to stimulus–response machines. For consciousness as a scientific question, it was a wasted century.

Behaviourism became a sort of Victorian sex police: so fearful of impure thought that the very essentials were suppressed. Like sex, consciousness was made dirty. But sex did not disappear in Queen Victoria’s time, and consciousness did not fade away when it was denounced as unclean.

The price of purity was decades of ignorance about our own humanity.

### **What Philosophers Understand, and What They Don’t**

Dennett’s defence of the double life raises a deeper question. Philosophers delight in telling us that we all make philosophical assumptions, whether we know it or not. They are right: All of us are intuitive philosophers, switching premises from moment to moment. When we have a nagging headache we simply assert a mental fact — conscious pain — as fact. But we have no problem at all in taking a physical aspirin for that mental headache. Normally both mental and

physical perspectives work fine, even if they are philosophically distinct. We flip back and forth between them in a completely pragmatic way.

Science is just as pragmatic. There is not a shred of evidence that ‘dualistic dirt’ creates any empirical problems at all. We now have two hundred years of psychophysics, our major source of evidence on conscious sensations, and no one has ever run into an empirical paradox.

The idea that scientists must be philosophically pure simply has no basis in history. Scientists have never been metaphysically consistent and have never needed to be — just as in daily life we do not need to separate mental headaches from physical aspirins. In real life, enforcing philosophical consistency would just leave us with a bigger headache.

Historically it doesn’t matter a bit what scientists believe as long as they follow the phenomena. Ignoring philosophy has been very useful in physics and biology. Gravity was full of philosophical problems in Newton’s time. Darwin was attacked for decades by vitalistic philosophers. Copernicus notoriously upset the philosophical apple carts of his time. If Newton, Darwin and Copernicus had stopped working to satisfy their philosophical critics we would still be living in the Dark Ages.

The answer, therefore, is not to turn scientists into philosophers. The traditional scientific answer is to ignore philosophical puzzles and go chasing after the biggest reliable phenomena we can find. In mind and brain science, consciousness is the biggest reliable phenomenon in sight. Consciousness is the difference between sleeping and waking, seeing and blindness, understanding and forgetting. To ignore the great looming mountain of consciousness is to do bad science. Physics cannot be done by evading gravity, and biology cannot succeed by turning a blind eye to the origin of species. Likewise, the mind–brain sciences cannot be pursued without consciousness.

New scientific problems always violate philosophical dogma; it is absolutely routine. We should not be surprised therefore that the study of consciousness contradicts someone’s philosophy today. We should certainly not let it stop scientific curiosity, as it stopped the behaviourists. It is far better to let scientists to follow the phenomena without interference.

### **Skinner as Philosopher: The Itch to Legislate to Science**

If philosophical consistency is irrelevant to science, the long taboo against consciousness looks even more puzzling. Why did psychologists waste a century trying to be metaphysically pure, rather than scientifically productive? The simple answer may be that psychology, a young and insecure science, was frightened by logical positivist philosophers who damned its perfectly good investigations as ‘unscientific’. Psychologists simply dropped their William James and fled for the safety of rat mazes and Skinner boxes.

It may be said that B.F. Skinner as a behaviourist was not a scientist at all; he was a philosopher who also ran pigeons. Skinner after all insisted that behaviourism was a philosophy and not science: ‘Behaviorism is not the science

of man, it is the philosophy of that science' (1974, p. 3). He saw no difference between behaviourism and logical positivism. Thus Skinner qua behaviourist was a philosopher. Behaviourism meant the triumph of philosophical purity over scientific pragmatism about consciousness.

Contrary to popular myth, Skinner's core beliefs were not based on empirical discoveries in the laboratory. He came to them at the age of nineteen in 1924, after reading a book of philosophy — Bertrand Russell on the nature of mind (Russell, 1921). On the question of consciousness his beliefs were fixed long before he had run his first experiment, and indeed before he had taken his first psychology class. Skinner had a quasi-religious conversion to the behaviouristic faith at the end of his Dark Year, and never changed his mind. He tells us that he entered Harvard a convinced anti-subjectivist, ready to do battle with the consciousness psychology of his professors.

The philosophical nature of Skinner's behaviourism also explains why he never felt the need to test his basic claims. The indefensible notion that consciousness was irrelevant to behaviour simply followed from his philosophy. In fact, the great mass of evidence is against it; unconscious people don't behave, and they do not learn (Baars, 1988; 1997; 2002a). But Skinner never tried to justify his rejection of consciousness by evidence; he apparently felt it wasn't necessary. In this crucial respect he was not an empirical scientist at all.

Philosophers since Plato have had a great itch to legislate to the world. Behaviourism and its cousins reflect that itch. They were basically philosophical efforts to preach to science. The mature sciences ignored those attempts, but the baby science of psychology was far too ready to listen. Behaviourism purged the best ideas from psychology. Yet real science does not thrive on intellectual strictures — a world of prohibited thoughts. Thus behaviourism led to a great intellectual emptiness; and because it persists in many ways, we are still afflicted by an emptiness at the very heart of the mind–brain sciences.

### **Robert Epstein: The Triumph of Consciousness.**

Except for Julie Vargas, Robert Epstein spent more time with B.F. Skinner than any of the commentators. He gives a passionate defence of Skinner, claiming in particular that he did not appear to be conflicted about the subjective life. I agree that Skinner's image later in life was quite serene. Yet Epstein concedes my basic observation about inner conflict: '... the debate between Frazier and Burris (who in some sense represented two "sides" of Skinner) was fully resolved at the end of the novel, with Frazier, the more radical of the two, winning handily.'

The question seems to be whether Skinner's inner conflict was resolved in 1945, or whether it continued. I don't know. My guess is that such a pervasive life conflict is not instantly resolved. But it is an empirical question. Further biographical information may give us an answer.

On all points of behaviouristic doctrine Epstein has come around and accepted the central role of consciousness. I welcome Epstein's conversion, but I am surprised at his claim that consciousness was never taboo! That is contrary to my

lifetime experience in psychology, and contrary to comments made by Kihlstrom, Dennett, Watt, Brandt, Masson, Dalton, Dulany, and Goguen.

For example, Epstein writes:

In fact, Skinner never abandoned any of the richness of his own experience. ... just because someone enters the lab on occasion doesn't mean that he or she needs to give up one jot of his or her subjective life — if, indeed, there is some way to do so!

Indeed. But that is not the image Skinner worked a lifetime to portray, and which every young psychology student in the United States absorbed like mother's milk.

Even hardcore physicists — Einstein comes to mind — lead rich, imaginative, subjective lives without apparent conflict. Why should Skinner have had a problem?

The difference, of course, is that Skinner *claimed* in his public persona to do without all that. But Epstein confirms that Skinner's public posture was simply misleading.

So what *was* Skinner's perspective on consciousness? First, as I've already noted, the experience that gives rise to the language of consciousness is quite real; Skinner never claimed otherwise. It can hardly be denied that we think, imagine, feel, and so on.

A great many psychologists would be astonished to hear that, since they have discussed those questions for decades against fierce behaviouristic resistance. Even today, as Kihlstrom points out, some cognitive psychologists evade the term 'consciousness' like the plague. Skinner's influence persists.

Finally, Epstein seems to admit there is something to the argument: 'I agree with Baars on one point: Skinner's nonscientific writings carry considerable philosophical baggage, and the baggage is more harmful than helpful at this point.' But that misses the point. It was *precisely* Skinner's 'philosophical baggage' that made him so stunningly influential for five decades. Had Skinner simply done laboratory work we would not know his name, any more than we know thousands of quiet experimenters. We cannot escape the incontrovertible fact that Skinner's was the most powerful single voice for purging consciousness in the twentieth century. To deny that is a hopeless effort to rewrite history.

Epstein misreads me on a few points, such as the idea that Skinner actually conditioned his babies in the air crib. No, I did not say that. I suggested that he used the public image of conditioning babies to provoke headlines. It was a publicity strategy, following John Watson's very successful example, and raised public awareness of Skinner just before *Walden Two* came out. Like Watson, Skinner was a great publicist.

The important substantive point is that Epstein, in some ways Skinner's heir, now agrees on the central role of consciousness. That is what really matters.

### Vargas: What Did Skinner Discover?

Julie Vargas commendably defends her father's work. As I note above, I would never question his role as a parent, and never believed the myth that he kept his young children in operant boxes. My disagreements with Skinner are intellectual, not personal.

Mrs. Vargas tells us that it was not her father but the editors of *Ladies Home Journal* who made up the title 'Baby in a box' for his 1945 article. It is possible. But he surely could have refused permission to publish had he felt it to be misleading. He was not averse to reinforcing the legend of baby cribs in other places. After Watson's amazing success in pushing the fantasy of baby conditioning, the public was quite ready to believe that behaviourists could transform babies into perfect children and adults. Skinner's 'Baby in a box' made the headlines just before *Walden Two*, his own Utopian fantasy of a society shaped from birth by operant conditioning. Even if Skinner carefully avoided Watson's blatant misrepresentations, what else was the public supposed to think?

A larger question is whether operant conditioning was really a revolutionary discovery. Mrs. Vargas loyally claims that 'behaviour is controlled by its consequences.' It sounds like a revolutionary insight. But is it?

Consider a few lines from another famous figure of the time, P.G. Wodehouse, the inventor of Jeeves and Bertie Wooster. In *Carry On, Jeeves!* (1925) Wodehouse tells us how Jeeves and Bertie try to condition the verbal behaviour of Baby Tootles. Tootles is supposed to shout 'Kiss Freddie!' in front of the estranged young lovers Elizabeth and Freddie, to heal their romantic rift and bring them together again. Naturally, they try to reward Baby Tootles for saying 'Kiss Freddie!' by giving him candy at just the right moment.

'The chief difficulty sir,' said Jeeves, at the end of the first rehearsal, 'is, as I envisage it, to establish in the young gentleman's mind a connection between the words we desire him to say and the refreshment.'

'Exactly,' I said. 'Once the blighter has grasped the basic fact that those two words, clearly spoken, result automatically in chocolate nougat, we have got a success.'

Bertie and Jeeves found that rewarding Baby Tootles worked — not very well, but well enough. They could have claimed a major advance in science. But they didn't, because rewarding a behaviour to increase its frequency is not new. People have known about it for thousands of years. Yet operant conditioning was widely billed as a major new discovery.

What was it Skinner discovered? The answer is that he found a new way to talk about what we all know. It was the language of radical behaviourism, which requires a total denial of the inner perspective of conscious creatures, including the fact that babies and animals have conscious goals like eating, drinking, and pooping when nature calls. Once we replace the behaviouristic slogan 'organisms are controlled by consequences' with the old idea that 'animals pursue goals' we see what makes the trick work. One hand made goals magically disappear, while the other rediscovered them in behaviour. Goals become

‘consequences’ and *voilà!* — an ancient chestnut becomes a new scientific discovery. The rabbit out of the hat is really not so new and magical after all.

Skinner’s external description of goals is useful when we study rats and pigeons, whose goals may not be obvious. But the old saw applies: What’s true about operant conditioning isn’t new, and what’s new isn’t true.

### Skinner’s Psychodynamics

Several commentators take note of psychodynamic themes in the target article. Some seem to approve (Watt, Masson) and some disapprove (Kihlstrom, Dalton). I would point out that those themes are not mine — they are Skinner’s. I would not feel justified in tracing them if Skinner himself was not doing the interpreting.

We know that Skinner lectured on psychoanalytic ideas in literature during his years at Minnesota, singling out Oedipal themes in major English and American novels. Psychoanalysis was a common undercurrent in behaviourism until the 1950s. John B. Watson wrote as many papers on psychoanalytic topics as he did on behaviourism after 1913, trying to translate Freud into supposedly more objective terms. The unconscious became the ‘unverbalized’ and the Oedipus Complex became the ‘Incest Complex’. Thus Freudian speculation was turned into behaviouristic science. Clark Hull put Freudian instinctual drives into his theory. (Trieb in Freud turns into Hull’s Drive). Edward Tolman tried to incorporate ego defence mechanisms. Thus Skinner’s psychodynamic interests were not unusual at the time. What has not been pointed out until now, as far as I know, is how much Skinner interpreted his own life in these terms.

While preparing this reply I came across yet another striking example. In a brief autobiographical chapter (1967) he wrote of the tragic death of his teenage brother:

I had a brother two and a half years younger than I. As a child I was fond of him. I remember being ridiculed for calling him ‘honey,’ a term my mother used for both of us at home. As he grew older he proved to be much better at sports and more popular than I, and he teased me for my literary and artistic interests. When he died suddenly of a cerebral aneurysm at the age of 16, I was not much moved. I probably felt guilty because I was not.

Skinner describes a change in his feelings for his brother. ‘As a child I was fond of him.’ But during their teenage years, his brother ‘proved to be much better at sports and more popular than I, and ... teased me for my literary and artistic interests.’ After their childhood closeness he felt only numb when his brother suddenly died: ‘I was not much moved.’

Skinner’s love for his brother in childhood was a *conscious* experience. Feeling numb at his death was the absence of an *expected* conscious event. Hardly a sentence can be understood in radical behaviouristic terms.

To this tragic story Skinner added an astonishing ending.

I had once made an arrowhead from the top of a tin can, and when I made a test shot straight up into the air, the arrow fell back and struck my brother in the shoulder, drawing blood. I recalled the event with a shock many years later when I heard Laurence Olivier speaking Hamlet's lines:

Let my disclaiming from a purpos'd evil  
Free me so far in your most generous thought,  
That I have shot mine arrow o'er the house,  
And hurt my brother.

Skinner's shock on hearing Hamlet's lines reveals again how sensitive he was to these matters. Like any other English Literature major he knew that Hamlet culminates in a play within a play, in which the King and Queen see themselves exposed on stage for the murder of Hamlet's father. They, too, 'recall the event with a shock' when the players act out their guilt. 'The play's the thing/ wherein I'll catch the conscience of the King' says Hamlet. And the play was the thing wherein Shakespeare caught the conscience of B.F. Skinner. No longer could he say about his brother's death, 'I was not much moved. I probably felt guilty because I was not.' His shocked recall was a classic moment of insight.

Personally I've never believed in the Oedipus Complex. Other ideas from Freud seem to be better supported by evidence. But one would have to be deaf, dumb and blind not to see that *Skinner* had a very Oedipal theme in mind in these reminiscences: sexual competition with a more attractive brother at the very height of teenage hormonal frenzy ('he proved to be much better at sports and more popular than I'), his sudden death, a memory of drawing blood from his brother by an accidental wounding, feelings of guilt and denial.

This is the stuff of Cain and Abel. Skinner was almost nineteen when his brother died, at the very beginning of his Dark Year — when his father lost his career and the young Skinner himself was forced to abandon a cherished ambition of becoming a writer. A loved and envied brother dead, a father in crisis, a family grieving and a great life dream abandoned — all in little more than a year. It was a time packed with emotional dynamite, and helps to explain why he reacted so strongly with his new commitment to anti-subjectivism, utterly opposed to his former love for stream of consciousness art. 'At times I was quite violent: literature must be demolished' (Skinner, 1976, pp. 262–84). Anti-subjectivism was to be his faith to the end of his life.

Symbolic of his new identity he changed his very name, from the long names that were fashionable in the 1920s to a clipped pair of letters: Burrhus Frederick Skinner the budding novelist became B.F. Skinner the toughminded scientist, in emulation of I.P. Pavlov. Even later in life he called his two sides 'Burrus', the tenderminded idealist, and 'Frazier', the rigorous anti-subjectivist.

With his tale of Hamlet, Skinner tells us he was *not* entirely numb to his brother's tragic death at the beginning of his Dark Year, culminating in his rage against art and consciousness itself. And with his new name, he adopted a new identity.



Once more, this is not the Skinner who told us for decades that our conscious experience is irrelevant. All shades of subjectivity enter into his story. It was the richly self-conscious Skinner who finally told us his lifelong secret.

### **Watt's View of Behaviourism**

Douglas Watt asks

to what extent is a fundamental conceptual error just a 'misfiring of cognitive circuits' vs. it having more affective origins? ... Psychodynamic psychology would argue that they stem from our ongoing need to delimit the activation of troubling and painful affective states... .

I understand Watt's hypothesis, but I would hold it lightly. Early science is inherently an uncertain enterprise, and is therefore vulnerable to all kinds of influences beyond solid evidence and theory. Personal emotional conflicts may well have something to do with the early choices that are made, and an argument for that can be made for the young B.F. Skinner.

But many other influences converge. For example, unlike the mature sciences, psychology as a field was 'postulated into existence' in the years before 1900. Professionalization may have played a role. In physics, chemistry and biology, sound science developed long before the academic profession arose. Psychology had no impressive achievements, no equations for the solar system or Periodic Table of the Elements. As a result, some psychologists may have felt the need to make overstated scientific claims that could not be sustained over the long run, much as adolescents often pretend to have stronger convictions than they really feel. Professionalization tended to fix and harden those premature claims. The result was the extraordinary spectacle of a discipline rejecting its own most central issue.

Behaviourism, like any historical trend, must involve a confluence of factors.

### **Brandt's Semiotic Observations**

Per Aage Brandt points out that Skinner's adolescent crisis cannot explain the pervasive anti-subjectivism of Anglo-American thought in the twentieth century. He is right, of course, though I would point out that the radicals had power far out of proportion to their numbers. Just three famous radical behaviourists, Pavlov, Watson and Skinner, dominated the public image of psychology between 1910 and 1990. Nevertheless, Brandt is right that the person must fit the times to explain such influence.

Brandt looks for an explanation in the philosophical context. He suggests that pragmatism was key to behaviourism, the notion that 'meaning in general is practical, and consists in the practice, or behaviour, that follows from our understanding ... rather than in the reportable inner images that form their content.' That can be seen even in contemporary cognitive semantics, where 'the meaning of something is the way in which it is "true".'

Skinner was certainly influenced by John Dewey's Chicago Functionalism, the most famous school of pragmatism at the time, and Skinner, too, was a kind of functionalist. Skinner defined psychological science as the 'prediction and control of behavior,' a very pragmatist definition. This was in clear contrast to the tradition of Western science since the Greeks, which held that understanding, not control, was the first goal of science. No one confuses pure physics with engineering, but Skinner invited just such a misunderstanding. And Skinner's idea of motivation was 'reinforcement', defined as a change in the frequency of a response by its consequences, a pragmatist idea if ever there was one.

Like Brandt, I am puzzled by the shortage of mental notions of meaning in cognitive science. Intuitively, the meaning of an expression is what we think of it. That common meaning of meaning seems to be avoided even today, so that we have a vast cottage industry picking apart the truth-value of imaginary sentences, with nothing to say about the acts of meaning you and I engage in in everyday life. In that respect Brandt's critique is right on target. Whether it completely explains the dominance of behaviourism, it is a prominent thread in the fabric of the time.

As scientists return to consciousness, one great opportunity will be to recapture a notion of meaning that casts some light on our daily struggle to construct a mental world that give us a sense of rightness and satisfaction.

### **Roepstorff's Argument For Social Dissociation**

In a very thoughtful commentary Andreas Roepstorff suggests that

It seems very probable that this split is but one instance of division between the sciences on one hand and the humanities on the other which was widespread in the Century that we have just left. A split, which was first described as originating in 'two different cultures' (Snow, 1959) but which is now often seen to be part of a peculiar 'modern constitution' (Latour, 1993; 1999) that in a highly specific way separated the world into distinct entities such as nature and culture with 'the mental' in strange ways located right in the middle.

There were two dissociations, Roepstorff argues. The dissociation of the public perspective from personal consciousness, and

a dissociation of the generalisable experimental subject from those concrete, individual persons, embedded in social and cultural relationships, who volunteer to play the roles of subjects for the psychological examinations (Roepstorff, 2002).

I agree. Yet the two are intimately connected. If I recognize your consciousness as well as mine, I immediately bring in a social perspective. If, on the contrary, I do not recognize your consciousness, even adding the social dimension gives us a woefully impoverished view of the human condition. Perhaps the worst horrors of the twentieth century were inflicted by forces that insisted on the priority of a powerful in-group, while denying the individual conscious experiences of a helpless out-group.

I would suggest that a return to consciousness immediately suggests a deeper conception of the social world. An essential part of our social reality is our conscious acknowledgement of each other's consciousness, the second person perspective. Indeed, Roepstorff's brain imaging research with Chris Frith supports that contention.

### **Dulany's Research on Consciousness.**

Donaldson E. Dulany has obtained more experimental evidence for conscious influences in human behaviour than anyone else I know. For decades he has dug out fact after fact indicating the many roles of consciousness in learning. He has debated with behaviourists and cognitivists during that time, and understands the issues as deeply as anyone. It is a privilege to welcome his participation.

Dulany argues that behaviourists confused metaphysics with empirical theory.

With a failure to distinguish metaphysical claims ('Consciousness as soul is nonmaterial, and thus perhaps immortal') from theoretical claims ('Conscious states function within causal networks'), psychologists ... could have no truck with consciousness.

On the contrary,

mental life consists of a rich causal network of conscious states (Dulany, 1991; 1997; 1999; in press).

The evidence for that, to my mind, is simply overwhelming.

The scientific problem of volition is regularly confused with the metaphysical debate about free will, just as the empirical question of consciousness is confused with the metaphysical mind-body puzzle. Those misconceptions are largely responsible for the lack of progress in psychology. Brain science is much less confused today, and is making new discoveries about consciousness every month.

I only depart from Dulany on the reality of unconscious processes. I believe our mind-brains encompass both conscious and unconscious events, while Dulany prefers the Jamesian position of denying unconscious psychological events. The empirical controversy, I believe, depends on James' question of whether there may be fleeting or vague conscious processes, which seem to be unconscious but are not. In implicit learning there seem to be such semi-conscious events, which may be traced with careful experimental methods. Dulany has made a great effort to do that.

In spite of the flaws Dulany points out, there is strong evidence for unconscious intelligent processes from many sources. I cannot tease out all the issues here, but interested readers are referred to Baars (1988) and Baars *et al.* (in press) for details.

### **Kihlstrom's Cognitive History**

I am in almost complete agreement with John Kihlstrom's scholarly commentary. Yes, of course it is possible to understand the taboo against consciousness in intellectual terms; indeed, it is necessary. Kihlstrom cites my 1986 book, *The Cognitive Revolution in Psychology*, where I have done so in detail.

Yet after many years of thinking about the astonishing power of behaviourism, I have become dissatisfied with a purely cognitive account. Because psychology is a young and tentative science, it is vulnerable to nonscientific influences. Albert Einstein's autobiography ends about the age of 20, and Einstein remarks that his subsequent years can only be understood in terms of the scientific questions on which he worked. In his own eyes he had no significant personal life after that. That makes some sense in a highly structured enterprise like mathematics or physics, which cannot be shaped by our personal foibles. I don't know of a psychologist who can say the same thing.

Some nagging questions are not answered by Kihlstrom's cognitive account. It is something of a judgment call whether Skinner simply separated life and work as all of us do, or whether he had a genuinely dissociative mindset. Life and work rarely require us to believe in diametrically opposite things, but Skinner did so every day. For that reason I would judge more on the dissociative side than Kihlstrom does.

Another unanswered question is raised by the kind of encounter Kihlstrom cites:

As late as 1995, a world-famous cognitive psychologist proudly informed me at a cocktail party that he had written several books on cognition without once using the word 'consciousness'.

I have had similar conversations, which simply flummox me. Would a physicist boast of writing books without the word 'gravity'? In the year 2003 I cannot comprehend that attitude on purely intellectual grounds. I suspect that future historians will share my bafflement. But that depends on one's bets about the future. I think that consciousness is well on its way to becoming again as fundamental to the mind-brain sciences as gravity is to physics. Kihlstrom seems to believe that we may continue to avoid it. Ultimately the weight of evidence will tell.

### **Dalton: Close, But No Cigar**

Tom Dalton writes that

the notions of mind and consciousness were expunged for most of the remainder of the twentieth century, even though Skinner acknowledged privately that consciousness was essential to understanding the human condition.

But he misreads me as giving a psychoanalytic explanation. As explained above, those themes are not mine but Skinner's. Skinner taught courses on Oedipal themes in American novels, and clearly suggested such themes in his own life.

I'm an openminded sceptic about psychoanalysis. The evidence for ego defence mechanisms, for example, seems very strong indeed. It is hardly possible to read political news without seeing displacement of blame, denial of facts that don't serve some politician, and the like. Human beings constantly defend their self-esteem. But I am sceptical about the Oedipal hypothesis.

I do owe a great debt, however, to the work of Lester Luborsky, who uses theme analysis to obtain evidence for the notion of 'transference', the idea that people interpret social experiences in terms of their own unresolved problems (Luborsky & Crits-Christof, 1998). This work is a great landmark in the scientific study of psychodynamics. It is entirely empirical. I have learned the importance of theme analysis from Luborsky's work, and use it to trace repetitive themes in Skinner's life. Theme analysis is an empirical method that does not require commitment to particular hypotheses.

Thus I simply don't agree with Dalton's remark about

Baars' ... strategy to employ psychoanalytic concepts to understand the inconsistencies between Skinner's public and private persona.

Because of the theoretical baggage that comes with psychoanalytic terms, I very carefully avoided using concepts like 'repression'. I do suggest that Skinner may have been dissociated to a degree, as an hypothesis.

*Dissociation* is not a psychoanalytic notion at all. It comes from hypnosis pioneers like Pierre Janet (Hilgard, 1986). I do not believe Freud used it. Unlike Freudian repression, dissociation is a descriptive term. It does not imply unconscious motivation. Dissociation has been studied very carefully by empirical psychologists like Ernest Hilgard and John Kihlstrom. There is no question that it exists, ranging from minor everyday dissociations to major dissociative disorders.

Dalton is also at odds with Skinner himself. Thus, he writes that 'Baars also contends that Skinner was a radical behaviourist.' But that was Skinner's own term for his beliefs! I had the opportunity in the early 1980s of asking him in person whether he still described himself as a radical behaviourist. He replied, '...'  
(Baars, 1986, p. x).

Dalton suggests that Skinner's radical behaviourism reflects a career strategy: 'many psychologists and other scientists who have attained prominence have taken extreme positions that attract attention and stir controversy'. If so, Skinner was more cynical than I would like to think. I would like to believe he was sincere in his radical behaviourism, but I cannot read minds. Perhaps Dalton is right.

### **Masson: Implications for Animal Consciousness**

Masson's comments about animal consciousness deserve to be taken seriously. By denying consciousness and feelings, behaviourism ended up trivializing both humans and animals. That was not the original intention, but it was the ultimate result. As Masson writes:

Darwin did not work under any of these intellectual strictures. It is puzzling to me that we have not taken seriously the direction he showed us already in 1873 in his book *The Expression of the Emotions in Man and Animals*. He saw the continuity that must exist between humans and animals when it comes to consciousness and emotions. ... He saw no problem in investigating the emotional life of his first son, when William, was no more than a few months old. He wanted to know the origins of friendship, cooperation, love, humour, all of the questions that are still with us today. Had we followed his lead, had we not been sabotaged by Skinner and radical behaviourism, would we, today, be closer to an answer?

I do not think we were deliberately sabotaged by Skinner, but I agree with Masson's main point. The brain evidence for sensory consciousness in mammals is simply overwhelming — and that includes such ethical hot buttons as pain perception (Baars, 2001; Baars *et al.*, in preparation).

Evading consciousness leads to ethical as well as scientific harm. Let me cite just one example. Jerome Kagan, one of the foremost infant psychologists, claimed several years ago that newborn babies do not have sensory consciousness (Kagan, 1998). But the brain evidence is just the opposite. Sensory consciousness appears to emerge about the sixth month of gestation, as we can tell from the electrical brain activity of premature infants. It is certainly present at birth. Newborns unquestionably perceive pain. Yet there still exists great confusion about the ethical need for anesthesia in infant surgery, including circumcision. An unknown number of babies may be subject to painful procedures because the reality of their sensory consciousness is still sometimes denied. The same is true for animals.

The science of consciousness has crucial ethical consequences.

### **Machan: A Taboo Against Psychology?**

Suppose a priest were caught abusing choirboys, or a politician were sexually serviced by a young intern while telephoning a Congressman on sending soldiers to war. If I understand Tibor Machan properly, such facts must not be discussed. They are 'psychologizing' and *Verboten*. Such strictures would put a permanent halt to biography and history writing, which routinely touch on psychological matters.

Or imagine that a scientist were to dedicate his public life to banning a core topic like consciousness, though he was privately enthralled by the subjective life. Would such facts be irrelevant?

Professor Machan tells us to ignore such evidence. I cannot agree. It makes no sense to proclaim a taboo against psychologizing, any more than it does to outlaw philosophizing. Fish gotta swim and birds gotta fly, philosophers gotta philosophize, and psychologists ... you get the idea.

Professor Machan misreads some plain language on a crucial point. I do not suggest that Skinner had a 'dissociative disorder' like multiple personality. There is not a shred of evidence for that. I do say that Skinner's behaviour seems to be split or dissociated, a point Skinner himself made with regard to his protagonists in *Walden Two*. The Skinner quotes in this Reply provide yet more

evidence on that point. I went to great lengths to point out that we are all mildly dissociated in some way — notably on matters like sex, eating the flesh of living creatures, antisocial emotions, and much more. ‘Dissociations in varying degrees,’ I wrote, ‘are as pervasive as the flu.’

Dissociation becomes pathological only in the extreme, just like sadness or anxiety. Skinner was a very well-functioning person. Any claims of pathology are simply untrue. It is distressing to see my efforts to make that clear being so misunderstood.

### **Goguen: Is Science Dehumanizing?**

Joseph Goguen is sceptical about Skinner and behaviourism but also about the mind–brain sciences in general. He points out that Chomsky’s linguistics evades consciousness, as did Minsky’s type of Artificial Intelligence. Goguen suggests that neuroscience, sociobiology and other trends are equally trivializing:

The dangers of sacrificing our humanity to the gods of science have not diminished, though today the organs of molecular biology and computational evolution may seem larger than those of physics.

I believe that is much too pessimistic. Science is ultimately a self-correcting enterprise. The very word ‘consciousness’ now occurs 280 times more often today than in 1950 in biomedical science. I believe we are on a long trajectory back to William James and the extraordinary nineteenth century, toward a more humanizing conception of human nature, supported by a vast array of evidence (e.g. Baars *et al.*, in press; Baars, 2002a).

Science and humanism are not opposites. It is surely humanistic to find out about consciousness in babies and animals. The evidence for pain perception in infants, cited a few paragraphs above, is just one example. My objection to behaviourism is not that it was too scientific, but that it was terribly bad science. It overlooked the great looming mountain of consciousness, a mistake comparable to physics overlooking gravity.

Science is about telling the truth, and consciousness is part of that. Ultimately, humanism and truth-telling cannot be at odds with each other. I believe we are on the road to recovery.

### **Conclusion**

Contemporary science has rediscovered consciousness, and in doing so it has rendered an implicit judgment on radical behaviourism. In its utter rejection of consciousness, behaviourism now looks like a great puzzle, standing out like the proverbial sore thumb from the psychological traditions of all written cultures. The twentieth century in Anglo-American and Soviet academia is the only time and place in which all mental concepts were declared officially taboo. No one interested in human nature can fail to wonder why.

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