Bernard J. Baars

The Double Life of B.F. Skinner

Inner Conflict, Dissociation and the Scientific Taboo against Consciousness

Abstract: *B.F. Skinner was the voice of radical behaviourism for some five decades, fighting relentlessly against consciousness as a scientific question. While in public he always argued the case for behaviourism, in fact Skinner was deeply at odds with himself, as he reveals in several books. Surprisingly, as a college student he was deeply interested in becoming a stream-of-consciousness novelist. When that ambition failed, he reacted with a radical rejection of the conscious life. Decades later Skinner's inner struggle still continued, as his autobiography shows. Like a mystery novelist, B.F. Skinner again and again provides the clues to his own secret.*

Skinner's conflict about consciousness was not just a personal idiosyncracy. Behaviourism and its radical rejection of personal experience was a major theme of the twentieth century, and continues even today. Rejection of consciousness became a core belief for academic psychologists and philosophers in the English-speaking world, justifying their claim to standing among the physical sciences. Skinner's life suggests that radical behaviourism may be associated with psychological conflict and some degree of dissociation. It also raises questions about the cultural climate that celebrated the rejection of consciousness.

The Most Famous Scientist in America

B.F. Skinner was the foremost public voice of behaviourism in the twentieth century. Skinner (1904–1990) made important contributions to associative conditioning in animals, and claimed to have a comprehensive answer to the puzzles of

Correspondence: Bernard J. Baars, The Neurosciences Institute, 10640 John Jay Hopkins Drive, San Diego, CA 92121, USA. *Email: baars@nsi.edu; bbaars8788@aol.com — please use both email addresses in correspondence.*

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human and animal behaviour.[1] His lifelong commitment was to radical behaviourism, 'in which the existence of subjective entities is denied' (Skinner, 1953; 1976, p. 117; Baars, 1986). Twentieth-century behaviourism launched a vigorous purge of consciousness from science, proclaiming an effective taboo that still sends ripples through the academic world today.

Another B.F. Skinner is not so well known. As a young man Skinner hoped to become a stream-of-consciousness novelist in the manner of Marcel Proust, James Joyce and John Dos Passos. While studying at Hamilton College B.F. Skinner was deeply committed to becoming a novelist. Decades later, in his autobiography, he still recounted with pride the fact that Robert Frost praised his psychological short stories. Yet his early ambition seems at odds with his lifelong reputation.

After finishing college Skinner tried to write a psychological novel — during his 'Dark Year', a year of crisis — but was unable to finish, surrounded as he was by family troubles in the small town of Scranton, Pennsylvania. That same year, he tells us, having failed to become a novelist he became a behaviourist who rejected the world of subjective experience.

> I had apparently failed as a writer but was it not possible that literature had failed me as a method? . . . Literature as a form was dead; I would turn to science. . . . At times I was quite violent: literature must be demolished (Skinner, 1976, p. 291).

Yet even later in life he continued to think of himself as 'a sort of behavioristic Proust' (Skinner, 1976, p. 16). The conflicting themes of consciousness and its rejection continued to haunt Skinner's thinking for many years, as we will see. But Skinner's public persona seemed serenely behaviouristic and free of conflict.

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[1] Skinner's major contribution has generally been viewed as providing a functionalist interpretation of behavioural conditioning, applied to what he called operant behaviour (voluntary action) as opposed to stimulus-triggered reflexes, which he called respondent. Skinner was an excellent experimentalist and devised clever ways to obtain automatically countable responses long before the invention of the computer.

Skinner also devised an externalist language for describing and training behaviour without recourse to concepts like goals. Goals can be described from the outside as a contingent relationship between an action and an outcome (if I do X, I will obtain Y). Outcomes that increase the probability of operant responses were defined as 'reinforcing stimuli'. Thus all goal-directed actions could be described from the outside in terms of 'contingencies of reinforcement'. When generalized, this leads to a kind of pragmatist epistemology, in which the actions of scientists themselves are also controlled by contingencies of reinforcement.

Skinner clearly saw this externalist redefinition as a major scientific advance. However, others have viewed it as a way of evading goals, an essential construct for understanding human and animal motivation. Like Watson, Skinner attempted to explain all behaviour in terms of conditioning, minimizing other neurobiological and cognitive factors. Operant conditioning is nevertheless highly useful for training animals in science and elsewhere, where one is more concerned with shaping behaviour than with the underlying learning and control mechanisms.

In the years since Skinner's influence has waned his methods have been retained, but biocognitive approaches to animal behaviour and learning are clearly in the ascendant. Such approaches often make inferences from behaviour to underlying constructs, such as working memory, goals, and the like (Baars, 1986). It is an odd curiosity to the author that consciousness, which in principle is just another inferred scientific construct, has only recently begun to recover from a century of taboo. Behaviourism may still be alive in some ways (Baars, 1986).

The term 'stream of consciousness' comes from William James, whose *Principles of Psychology* shaped American psychology from 1890 until the rise of behaviourism after 1913. The *Principles* summed up a century of remarkable studies of consciousness, beginning with the discovery of hypnosis and the first scientific experiments on sensation. Its 1300 pages are full of facts and evidence; essentially all the facts James knew in 1890 have been verified by later studies. James's engaging description of the stream of consciousness inspired countless artists, writers and filmmakers in the twentieth century. Poets and novelists like Virginia Woolf, Hemingway, Gertrude Stein and William Yeats experimented with stream-of-consciousness writing, most famously in Joyce's *Ulysses* (1922). Indeed, stream-of-consciousness art is still embedded in our movies and writing today. European phenomenologists like Hüsserl also looked to James for inspiration. But after the rise of behaviourism in the English-speaking world, academic psychologists expelled William James and consciousness itself.

The Behaviouristic Revolution

Significantly John B. Watson's behaviourist manifesto was delivered in 1913, only three years after the death of William James. A decade later Watson wrote:

> . . . the time has come for psychology to discard all reference to consciousness . . . it is neither a definable nor a usable concept, it is merely another word for the 'soul' of more ancient times. . . . No one has ever touched a soul or seen one in a test-tube. Consciousness is just as unprovable, as unapproachable as the old concept of the soul . . . the Behaviourist must exclude from his scientific vocabulary all subjective terms such as sensation, perception, image, desire, purpose, and even thinking and emotion as they were subjectively defined (Watson, 1925).

Watson's words provide the most straightforward description of the entire movement, though all sorts of subtleties were added later. Watson's blunt language accurately captures the overarching thrust: an unrelenting effort to purge consciousness from the psychological and brain sciences. B.F. Skinner, Watson's successor as leader of the radical wing, concurred:

> . . . 'mind' and 'ideas' are non-existent entities, invented for the sole purpose of providing spurious explanations . . . since mental or psychic terms are asserted to lack the dimensions of physical science, we have an additional reason for rejecting them. (Skinner, 1953)

Edna Heidbreder, one of the most thoughtful observers of the time, wrote that:

> It is difficult to realize the vehemence and thoroughness with which the concept of consciousness is rejected [by Watson]. Mental processes, consciousness, souls, and ghosts are all of a piece, and are altogether unfit for scientific use. The existence of consciousness is a 'plain assumption.' It cannot be proved by any scientific test, for consciousness cannot be seen, nor touched, nor exhibited in a test-tube. . . . With the simplicity and finality of the Last Judgment, behaviorism divides the sheep from the goats. On the right side are behaviorism and science and all its works; on the left are souls and superstition and mistaken tradition; and the line of demarcation is clear and unmistakable (Heidbreder, 1933).

In the decades after 1913 the lexicon of common-sense psychology was purged from science. How many words and the ideas they convey were banished, in effect? *Roget's Thesaurus* can give us a rough estimate. It divides the entire English vocabulary into six great semantic classes, from Space, Matter and Abstract Relations to Intellect, Volition and Affections. The last three categories are purely psychological — in Skinner's words 'mentalistic' — and therefore unscientific. They cover sixty-three percent of the *Thesaurus* (1995). In cleansing the vocabulary of psychology Watson and Skinner effectively discarded almost two-thirds of the words, the ones we use every day to describe human beings. Consciousness went first, but it was quickly followed by the entire vocabulary of volition, attention, self, imagery, planning, thinking, knowledge, inner speech, intentions, expectations, memory and perception. Everything that could not be observed directly — and few psychological concepts can be — was to be tossed out. Assuming a recognition vocabulary for educated English speakers of about 100,000 words, some 63,000 words were to be eliminated. It was a feat that censors throughout history might have regarded with some respect.

Of course the movement went under many names — behaviourism, neobehaviourism, logical positivism, operationism, reflexology, physicalism, and so on (Baars, 1986). It was encouraged by some of the most famous philosophers of the century, like Bertrand Russell, Ludwig Wittgenstein and Gilbert Ryle. Indeed, Bertrand Russell praised Watson as a new Aristotle, and H.G. Wells celebrated Pavlov in similar elevated terms. Well-known philosophers like Daniel C. Dennett and John Searle emerged from that tradition. Even now, when it is usually disavowed, a kind of cryptobehaviourism continues to rule many minds.

The behaviouristic revolution in America moved with extraordinary speed. As Heidbreder wrote,

> Within American psychology the rise of behaviorism has been both conspicuous and important. . . . Indeed, one of the signs of the vigor of this extraordinarily vigorous movement is the way in which it has managed to get its attitudes recognized by those who oppose its fundamental doctrines (Heidbreder, 1933, Chapter VII).

As a result, psychologists avoided consciousness for most of the twentieth century. The central topic in psychological science became taboo. Those with serious interest in it risked professional suicide. As the eminent psychologist George A. Miller said about behaviourism at mid-century:

> It was perceived as the point of origin for scientific psychology in the United States. The chairmen of all the important departments would tell you that they were behaviorists. . . . The power, the honors, the authority, the textbooks, the money, everything in psychology was owned by the behavioristic school . . . those of us who wanted to be scientific psychologists couldn't really oppose it. You just wouldn't get a job (see Baars, 1986, p. 203).

Skinner's early immersion in psychological fiction meant that he knew a great deal about what he later rejected. Indeed, his autobiography tells us he remained involved with stream-of-consciousness art in his private life. Skinner describes

how he would walk regularly from home to Harvard University reading Beaudelaire. On arriving in Memorial Hall he would run behavioural experiments on pigeons and lecture on the scientific irrelevance of private experience. The two are hard to reconcile. Given Skinner's fame as a radical behaviourist from about 1935 to his death in 1990, the quite different private Skinner raises provocative questions.

B.F. Skinner was for decades the most famous scientist *of any kind* in the United States. In a century of unmatched creativity in physics, biology, medicine and all the other sciences, it was Skinner who dominated the public stage. He was the paragon of behaviourism; and yet he was deeply contradictory. It is this contradiction that makes him interesting.

The Human Paradox of Behaviourism

It is a paradox for conscious humans to deny consciousness. Yet generations of scientists influenced by behaviourism claimed to study human nature while doing so. They claimed to study perception without consciousness, attention without consciousness, learning, brain physiology, animal behaviour, sleep and dreaming, language, the whole list, all while explicitly evading the common sense of twenty-six centuries of written human thought. Naturally they were unable to deal with unconscious events either; you can't have an unconscious without consciousness. Yet they experienced every waking moment consciously, like anyone else.

Skinner had an answer to this paradox, which he said was only apparent and temporary. Consciousness, he claimed, was not a matter of reality but of words. Yes, we were stuck with the vocabulary of common sense, using words like 'thinking', 'feeling' and 'paying attention' in everyday life. But these ancient verbal habits could be translated into visible behaviour, if they made any scientific sense at all. The vocabulary of mind would eventually be discarded, just as physics and chemistry did away with ether and phlogiston.

Behaviourism was a great translation project. As Heidbreder wrote:

> Emotions are not matters of feeling . . . they are (learned) bodily reactions . . . predominantly visceral. . . . So too are the complicated system of habits and motor skills that Watson refers to as 'manual habits' . . . including such specific skills as writing, typewriting, painting, and driving an automobile, and such generalized modes of behavior as make a man punctual, orderly and persevering. . . . 'Laryngeal habits' is the behaviorist's phrase for thinking. . . . Watson, by reducing images to implicit language responses, and affection to slight reactions set up by tumescence and detumescence of the genitals, maintained that both might be studied as bodily movements, and that there was therefore no portion of the subject-matter of psychology to which the methods of behaviorism were not adequate (Heidbreder, 1933, pp. 248–51).

Watson's ideas did not lead to empirical confirmation. But the translation programme held on in spite of a lack of evidence. In 1971 Skinner was still pursuing it in a more sophisticated way:

> 'I miss you' could almost be thought of as a metaphor based on target practice, equivalent to 'My behavior with respect to you as a person cannot reach its mark' (p. 10) . . . a 'lovelorn' person is unable to emit behavior directed toward the person he loves (p. 65) . . . when a person is 'aware of his purpose' he is feeling or observing introspectively produced by reinforcement (p. 63) . . . If he has been punished by his peers, he is said to feel shame; if he has been punished by a religious agency, he is said to feel a sense of sin; and if he has been punished by a governmental agency, he is said to feel guilt (p. 69).

Skinner himself noted that operant conditioning is a kind of translation of the Calvinist work ethic (Skinner, 1956). Instead of goals, we have reinforcement. Instead of work, operant behaviour. Nothing is free, everything must be paid for by work or by the rewards of work, like food, drink, or protection from pain. Like Calvinism Skinner preached an absolute determinism. Skinner's early religious upbringing (Skinner, 1967) may have shaped his thought (his grandmother once showed the young boy the burning coal fire in the kitchen to illustrate the fires of Hell). But in operant conditioning there is no guilt; everything depends on environmental contingencies of reinforcement. It is the work ethic sans consciousness.

As a student of psychology during the behaviourist era one learned the translations. Some terms lost their original meaning entirely. For example, 'experience' came to mean 'exposure to stimulation'. But originally 'experience' meant *conscious* experience, arguably still the most accurate meaning (Baars, 1988; 1997; 2002). Students learned to think in terms of the translations, and systematically ignored common-sense words evocative of consciousness.

In the last decade the techniques of brain imaging have led to a growing scientific reversal on consciousness. This is not the place to explore the details, but a simple glance at scientific headline journals like *Science* and *Nature* now shows frequent reports on conscious functions (Baars, 1988, 1997, 2002, unpublished; Baars *et al.*, in press). New journals and scientific societies have been founded, and established neurobiologists like Francis Crick and Gerald Edelman have written extensively on the problem. Consciousness seems to be emerging as a central aspect of mind and brain. With these developments behaviourism begins again to look like a paradox. How can conscious scientists deny the existence of consciousness?

I do not question the sincerity of behaviourists. It is worth asking, however, what the psychological consequences may be for those who accept such a living paradox. Does it involve a division in one's own experiences? A separation between one's private life and a more public, scientifically respectable persona? Or is it merely a *façon de parler*, a way of speaking that has no more psychological impact than a word game? For those who take behaviourism sincerely, it must be more than a word game; but a sincere effort to stand apart from one's own conscious experience must then have psychological consequences.

Behaviourism was a cultural as well as an intellectual force. How B.F. Skinner handled his lifelong division between the private, conscious Skinner and the

public behaviourist may give a hint about the broader culture in which behaviourism achieved such power and acclaim.

Skinner's Dark Year

Fortunately Skinner, who thought of himself as a man of destiny, saved a treasure trove of important letters and documents throughout his life. His three-volume autobiography is filled with quotations from these primary sources.

We have no way of knowing whether Skinner had the talent and dedication to achieve his youthful dream; maybe it was all a passing fancy. But where Hemingway, Henry Miller, Gertrude Stein and James Joyce fled their native soil to grow in the freedom of Paris or Trieste, Skinner tried to write psychological fiction in the restrictive Yankee culture of Scranton, PA.

On graduation from Hamilton College, Skinner decided to give himself a year to discover if he had it in him to write a novel. His father, he tells us, could not afford to send him to Paris, having lost his job as a lawyer with a Pennsylvania coal company. Skinner found himself at home in Scranton, under devastating pressure from parents and friends to 'do something', something productive in the eyes of the small town. Skinner himself repeatedly calls this his 'Dark Year'. During that fateful year of 1924 his father was trying to establish a private law practice with little success. Skinner tells how his father would come home at night and retreat 'weeping to his bedroom'.

Not surprisingly, Skinner found it impossible to write, assailed with guilt. Friends asked him what he was *doing*, and he had no answer they could understand. The Stock Market Crash of 1929 was only five years away, but Skinner's family faced economic insecurity even before the Depression.

It is worth noting the parallel between the young Skinner's crisis and his father's, both struggling desperately — and failing — in the role all respectable men had to fulfil in small-town America of the Twenties, that of making a good career, succeeding in the eyes of the town, and providing for their family. Towards the end of his Dark Year, Skinner tells us, he discovered Watson's radical behaviourism in a book by Bertrand Russell, and began to read Pavlov and other behaviourists.

Now his thoughts began to swing with a vengeance against the subjective life. He wrote intense polemics against literature. It was at this time, he tells us, that B.F. Skinner discovered himself to be a radical behaviourist — by his own definition, one who rejects the subjective life (see Skinner in Baars, 1986). He had not yet taken a single course in psychology.

The Will Story

One of the short stories Skinner sent to Robert Frost tells of a silent struggle between a husband, Will, and his wife Elsa. Elsa, an educated woman, is feeling confined and isolated in their small farmhouse far away in the countryside:

> She is tired and unhappy. . . . But she is afraid to face Will, because he will argue too persuasively. And so she starts to write a letter. . . . In it she tries to tell Will the truth, but she feels she is being unfair, and, weeping, she tears up the letter. . . . Will was right. Will was always right, wasn't he? (Skinner, 1976).

The story is entirely about Elsa's conscious inner struggle. Will is only thought about, not presented — as a character — in the story. Five decades later, in his autobiography, Skinner provided his own key to the story:

> It is no doubt significant that in my story Elsa's husband's name was Will. My mother called my father Will, but Elsa's story was mine, not hers. I lived it again and again during that year: no day seemed bad enough to justify the turmoil of an open break.

An open break was avoided, at the cost of submitting to an unwanted fate.

Skinner does not tell us much about his father, but drops a giant literary clue in the title of Volume I of his autobiography: *Particulars of my Life*. On the title page he cites Henry IV, Part I: '*Do thou stand for my father*, and examine me on the particulars of my life' (italics added). Given Skinner's literary skill, the clue is not likely to be an accident. Skinner is in effect asking his readers to listen to his *apologia* as if speaking to a father long gone, a half century later. In Shakespeare's play Prince Hal gives an imagined accounting to his father, the King, who knew of the Prince's carousing with drunken scoundrels like Falstaff. The play culminates with the end of Henry's wild youth, just as Skinner's first volume of autobiography ends with the sacrifice of his youthful dream. It is the end of Skinner's Dark Year. When at last he made the decision to pursue psychology at Harvard, Skinner writes: 'My decision was, of course, a tremendous relief for my father'.

Skinner entered Harvard graduate school ready to battle with the fatherly Edwin G. Boring, then chair of the Psychology Department and a leading advocate of consciousness studies. From his first day at Harvard, he tells us, he was at odds with Boring over the subjective life.

Skinner never learned much psychology other than his own. By 1935, as a member of the elite Harvard Society of Fellows, he had developed the laboratory methods of operant conditioning, along with an abiding faith in its universal applicability. These basic ideas changed only in detail between 1935 and the end of his life in 1990.

Skinner Provides his own Interpretation

If all this seems to have a psychodynamic flavour, it is no accident. By the 1920s Freud was beginning to be well known to the educated public, especially in literary circles, where psychodynamic ideas were soon used to write and understand fiction. John B. Watson was greatly enamoured of Freud. After the behaviourist manifesto of 1913, Watson wrote as many papers about psychoanalysis as he did about behaviourism itself. For example, Watson proposed using 'the unverbalized' instead of the unconscious, and the 'Incest Complex' instead of the Oedipus Complex, thereby making Freud scientifically respectable to behaviourists.

Other behaviourists of the 1930s also tried to convert Freud into observable behaviour. Clark Hull and Edward Tolman made serious attempts to do so. In a famous paper Tolman suggested ways of understanding Freudian defence mechanisms such as regression, displacement and the like, and Hull's drive theory was apparently borrowed from Freud's notion of Trieb (drive), the instinctual pool of psychic energy. It is only later that scientific psychologists decided *en masse* that Freud was wrong, and had to be purged.

In the 1930s and 40s, Skinner tells us, he taught classes covering 'unconscious language processes and their use in the production of literary effects'. His students were bored, he writes, and 'to entertain them, I "psychoanalyzed" Lewis Carroll, J.M. Barrie (Oedipal mother-love in *Margaret Ogilvy*), D.H. Lawrence (ditto in *Sons and Lovers*), and Dostoevski (Oedipal father-hatred in *The Brothers Karamazov*), devoting a full lecture to each'. While he tells us later that he did not consider Freud scientific, those lectures showed his lifelong skill in literary psychology.

Again, we need not introduce our own interpretation of Skinner's life themes. Skinner gives his own.

Consider another example.

The Dispute Between Burris and Frazier

The conflict between behaviourism and literature, Skinner tells us, came to a head in writing his utopian novel *Walden Two* (Skinner, 1948). Immediately after World War II he conceived a plan to write a novel about a behaviouristic utopia.

> I adopted a standard utopian strategy: a group of people would visit a community and hear it described and defended by a member . . . a few characters were needed, and they soon asserted themselves (Skinner, 1976).

A main theme of the novel is a prolonged debate between Burris, 'a pedestrian college teacher', somewhat vague and subjectivist in his inclinations, and Frazier, the hard-nosed behaviouristic utopian. Frazier, 'the founder of Walden Two, is a self-proclaimed genius who has deserted academic psychology for behavioural engineering, the new discipline upon which the community is based'.

Skinner was well aware that Burris was his own middle name Burrhus, and suggested that Frazier may have been a blend between Fred (his nickname to friends) and the tough-minded physiologist Crozier, Skinner's scientific mentor at Harvard. As he wrote: 'Some of Frazier's mannerisms . . . are Crozier's. Was "Frazier" a blend of "Fred" and "Crozier"?' Serving as his own interpreter, Skinner noted again: 'I did not know until l had finished the book that I was both Burris and Frazier.'

There is no stronger metaphor for inner conflict than a dialogue between two warring selves. The fact that Skinner did not know that 'until I had finished the book' is simply another way of saying that the conflict was unconscious.

It was an emotional process. He wrote:

> It must also be relevant that I wrote some parts with an emotional intensity that I have never experienced at any other time. There is a scene in which Burris and Frazier discuss the disparity between the chaos and turmoil in Frazier as a person and the order and serenity of the community he had founded. I composed it as I walked the streets near our house, and I came back and typed it out in white heat.

'Can't you see?' Frazier says to Burris,

> I'm not a product of Walden Two! . . . Isn't it enough that I've made other men likable and happy and productive? Why expect me to resemble them? Must I possess the virtues which I've proved to be best suited to a well-ordered society? Must I exhibit the interests and skills and untrammeled spirit which I've learned how to engender in others? Must I wear them like a damned mannikin? . . . Must the doctor share the health of his patient?

These are not the words of a person at peace with himself. They are not the words of someone who has resolved the youthful struggle for the freedom to write about the inner life of consciousness. Nor does it show that Skinner had come to terms with his decision to become a behaviourist. The struggle was unresolved.

Walden Two, he wrote later, 'was pretty obviously a venture in self-therapy in which I was struggling to reconcile two aspects of my own behaviour, represented by Burris and Frazier'.

Skinner's Search for Freedom

In *Beyond Freedom and Dignity* (1971) Skinner launched a public controversy over the reality of freedom and dignity. Such ideas were myths, he insisted from his standard philosophical platform. Yet his own life repeatedly shows a quest for a sense of freedom and dignity.

Freedom is the common thread connecting the Will story, Skinner's Dark Year and the Burris–Frazier dispute. Consider:

1. Skinner's Dark Year is explicitly portrayed as an intense struggle to be free to become a novelist, a struggle that he painfully lost.
2. In the Will story Elsa's desire to be free from her farm prison conflicts with Will's 'too persuasive' arguments. 'Elsa's story was mine . . . I lived it again and again during that year . . .'. Like Elsa, Skinner gave up his freedom by accepting an unwanted fate.
3. The struggle for freedom is sounded again in *Walden Two*. Even the coldly objective Frazier rebels against the constraints of operant Utopia.

We will see the quest for freedom sounded yet again in the following episodes.

What the Verbal Summator Said

In the 1930s Skinner discovered a sort of auditory Rorschach test which he called the Verbal Summator. One day, while working in the laboratory, he heard his electromechanical equipment emitting 'a rhythmic pulse: di-dah-di-di-dah — di-dah-di-di-dah'.

> Suddenly I heard myself saying 'You'll never get out; You'll never get out . . .' An imitative response had joined forces with some latent behavior, which I could attribute to a rather obvious source: I was a prisoner in my laboratory on a lovely day (Skinner, 1936).

Hearing illusory speech in repeating words is now called the Verbal Transformation Effect, and it is remarkably powerful. It occurs within half a minute when recorded words are repeated over and over (Warren, 1968). In a letter to a friend Skinner wrote that the Verbal Summator,

> . . . simply repeats a series of vowel sounds over and over again until the subject reads something into them. What the subject reads in is what he has on his mind. In short, the device enables the subconscious to verbalize itself with the aid of summation of imitative reflexes.

Again, Skinner provides his own clue. The Verbal Summator 'enables the subconscious to verbalize itself'. But the word 'never' suggests more than just one day of being a prisoner in the laboratory. 'You'll never get out; You'll never get out . . .' continues the motif of being trapped for life, the theme that is sounded so strongly in Skinner's Dark Year and in his Will story. It re-echoes a cry for freedom from the same B.F. Skinner who assured us in 1971 that freedom and dignity were to be purged from science.

Skinner's 'Baby in a Box'

In the 1940s Skinner promoted a wave of newspaper stories about an operant crib for his infant daughter, equipped to blow puffs of warm and cold air to shape the baby's responses. What Skinner called his 'Baby in a box' in the *Ladies Home Journal* (!) raised the spectre of babies being kept in boxes, not taken out to be hugged and to play freely (Skinner, 1945). It is a provocative image of separation and imprisonment, re-echoing the struggle between freedom and control. Like all of Skinner's writing, this one is carefully pitched to be provocative and soothing at the same time. While the title raises alarming images, the article itself assures the reader that science is discovering what is best for mother and child.

But there was a context. John B. Watson had written a bestselling book on *The Psychological Care of Infant and Child* that had indeed advised parents not to touch or hug their children, to keep them from developing an Incest Complex (Watson and Raynor, 1928). It was the first popular book on the psychology of childcare, claiming to be scientific, and sold hundreds of thousands of copies. B.F. Skinner's 'Baby in a box' article followed a path famously pioneered by Watson. Both Watson and Skinner observed only one baby, their own. Neither had remotely adequate evidence to justify their claims. Both extracted maximum publicity from provocative innuendos.

The idea of raising infants via operant conditioning has faded. Yes, you can shape babies' actions to an extent by rewarding one action and not another. But in the face of any great imperative of babyhood — potty-training, for example — such rewards and punishments are not very effective. Had Skinner been right about the power of reinforcement, the Terrible Twos would today be the

Harmonious Twos, and adolescent rebellion a thing of the past. Skinner's baby box was perhaps a publicity stunt to promote his utopian dreams for behaviourism.

Radical Behaviourism as Rebellion

Freedom was much in the air at the time. The Calvinism of Skinner's early upbringing denied freedom, with the hotly-debated doctrine of predestination. Early American novels like Hawthorne's *Scarlet Letter* play out the conflict between Puritan predestination and the emerging American ethic of individual freedom. This was taught routinely as part of a literary education. Skinner must have been thoroughly aware of this tension as a literature student at Hamilton College.

The radical behaviourism of Watson and Skinner is indeed an ideology of rebellion. It defines itself in a militant struggle against the perceived stranglehold of religion, and against religion's evil twin, the consciousness psychology of the older academic generation — all while proclaiming a determinism as rigorous as Calvin's theology (Watson, 1925; Skinner, 1987).

Skinner's recurrent quest for freedom may be understandable. Psychologists who study life development say that many people are guided in their youth by a personal dream, a commitment to a better life or an idealistic vision; in middle age the dream must often be adapted to fit an imperfect reality (Levinson, 1978/1986). The youthful dream is the overarching hope for many people. Abandoning it can be very painful.

It seems as if Skinner felt compelled to slay his adolescent dream of becoming a novelist long before he could know if it had any chance of coming true — and then reacted against it with a lifetime of anti-subjective philosophy.

Yet in a way Skinner did become a novelist. Not only did he write a best-selling novel, *Walden Two*, but he also wrote a literary autobiography in which he was the central character. Skinner was the hero of his own life novel.

The Split Culture: Consciousness Flourished in the Arts

Behaviourism was a cultural phenomenon of the twentieth century, but it was not the only one in which consciousness played a role. At the same time that science and philosophy were beating a rapid retreat, stream-of-consciousness fiction flowered. James Joyce, Henry James and Virginia Woolf were careful observers of the inner world of thoughts and feelings. Joyce's Ulysses is often considered the foremost novel of the twentieth century. It portrays the stream of consciousness of one day in the life of Leopold Bloom, a Jewish Dubliner of the 1920s, just the time of Skinner's Dark Year. Here is a famous moment in the mind of Bloom's lover Molly when she surrenders to him:

> And I thought well as well him as another and then I asked him with my eyes to ask again yes and then he asked me would I yes to say yes my mountain flower and first I

> put my arms around him yes and drew him down to me so he could feel my breasts all perfume yes and his heart was going like mad and yes I said yes I will Yes.

Is this really what it's like to be Molly in a moment of passion? It seems convincing to many people. The entire stream-of-consciousness movement in literature is based on very clear ideas about our inner lives, much of it straight from William James. This is the artistic world in which Skinner was first trained.

Virginia Woolf has many moments of such insight. In *A Room of One's Own* she writes:

> The beauty of the world has two edges,
> one of laughter, one of anguish,
> cutting the heart asunder (Woolf, 1929).

Those words mean nothing if they do not give us a moment of recognition based on our own experience. Woolf gives us a glimpse into the heights and depths of conscious emotions, in a single sentence. Like Joyce's evocation of Molly's experience, it is a small masterpiece.

These little gems of the writer's craft give an inkling of the creative torrent that shaped a whole century of art. Inspired by ideas about the stream of human consciousness the twentieth century saw an outpouring of psychological poetry, plays, movies like Alfred Hitchcock's *Psycho*, paintings like Picasso's *Guernica*, and music that pushed beyond the comfort zone of conscious feeling. Today popular novels routinely use the conscious inner voice, often with great skill. The stream of consciousness has become a standard tool of the writer's art.

While our artistic imagination is pervaded with ideas about human awareness, none of this great artistic deluge affected the sciences. The century of Joyce and Woolf seems to have nothing in common with the age of Watson and Skinner. They just happened to live at the same time. According to behaviouristic science the artistic world of feeling and intuition cannot be true. The shock of recognition it can give us has nothing to do with the real human condition.

If that is so one can only mourn the loss to science. What would a science of human beings be like if it had no place for love and hate? If it blotted out pain and pleasure?

The rejection of personal experience helped to open a great gap between the sciences and the arts. By mid-century the split became so obvious that the writer C.P. Snow devoted a series of novels to it. Snow wrote about the Two Cultures of science and literature:

> I was moving among two groups. . . . Literary intellectuals at one pole — at the other scientists. Between the two a gulf of mutual incomprehension. I believe the world is increasingly in danger of becoming split into groups which can no longer communicate with each other, which no longer think of each other as members of the same species (Snow, 1959).

As in any great cultural split there were faults on both sides. Artists turned away from science and vice versa. But psychology is a natural bridge to literature and the arts, and under behaviourism that bridge was shattered. History never tells us what might have been. But it is not difficult to suppose that a psychology

based on William James's broadminded *Principles of Psychology* (1890/1983) might have narrowed the gap between the sciences and humanities, not enlarged it. The twentieth century might have been quite different, less alienated, as a result.

Behaviourism has amazing staying power. It is alive today, though less overtly. One philosopher who continues to deny the reality of human awareness is Georges Rey, who, in an article called 'A reason for doubting the existence of consciousness' wrote:

> The concept of consciousness might turn out to be an excessively simplistic way of viewing our complicated lives . . . we could be mistaken in thinking of ourselves, or of anything, as conscious (Rey, 1983).

British philosopher Kathleen Wilkes, still fighting the good fight after all these years, wrote not so long ago: 'just as psychologists need not study "mind" per se, so they need not bother with consciousness' (Wilkes, 1988, p. 39).

Skinner vs. Skinner: Did He Consciously Play Out a Conflict?

Did Skinner really live as a behaviourist? He obviously took pleasure in the public image of the coldly objective professor. Skinner must have been aware of the storm of publicity his *Ladies Home Journal* 'Baby in a box' article would create.

It is doubtful that this public image resembled reality. Skinner was always good copy for reporters. Like the artists of his generation and ours, he loved to shock — *pour épater la bourgeoisie* — making headlines to provoke protests from the middle-class mothers and fathers in all the Scrantons in America. It is almost as if Skinner carried out a faithful script of the rebellious artist's life, while propagating the most influential rationale for casting consciousness out of psychology.

All of which raises the possibility that Skinner lived an elaborate pretence, seeking publicity for an ideology he knew would baffle and outrage the American bourgeoisie. That was the key to John B. Watson's fame in the popular culture.[2]

But that would imply a basic insincerity in Skinner's public beliefs. It seems unlikely. Skinner's lifelong talent for publicity and his ability to dramatize himself do not rule it out. Yet his behaviour seems more plausibly a combination of self-knowledge and genuine inner conflict, mixed with a degree of daring self-promotion.

Can anyone live as a committed behaviourist without separating their philosophy from lived experience? I doubt it. B.F. Skinner's life embodied a fenced-off polarity between a scientific life of disciplined objectivity and an inner life of lush and conflictful subjectivity. He meticulously left us the keys to his personal secret, filing cabinets full of letters and notes gathered over the decades since

[2] In this connection it is worth remembering that Watson made a stellar career in American advertising after leaving the university in a divorce scandal in 1924. As Vice President of the J. Walter Thompson agency on Madison Avenue, Watson indeed founded psychologically-based advertising in the United States.

youth, a three-volume autobiography, and a *Cumulative Record* of his scientific writings, gathered in a single volume for the convenience of biographers he was sure would come (Skinner, 1948; 1953; 1959/1961/1972; 1971; 1976). Skinner left nothing to chance. His was an adolescent dream of fame, carried out with meticulous care over sixty years.

Dissociation Is Easy and Common

Dissociation is a division in the expected access of conscious experience. We normally expect conscious access to some well-defined domains — including our senses, goals, memories, beliefs, feelings, recent experiences, present time and place, common knowledge, personal identity, realm of personal control, inner speech, imagined dreams and fantasies, and social circle. The term 'dissociation' covers a multitude of invisible partitions in that realm, some flexible, others quite rigid. It is a strikingly common feature of all human beings. When we eat the flesh of dead cows and birds we rarely remind ourselves of that reality. When we swallow billions of living bacteria in yoghurt or fermented drinks, we rarely do so consciously. Every breath and sip we take involves whole swarms of living creatures from bed bugs to amoebae, as scientists have shown since the invention of the microscope. Our skin, digestive tract and bodily orifices are teeming with life. But only neurotic people are obsessed with this plain fact. Most people simply dissociate. We mentally separate ourselves from the reality.

Dissociations can be easily evoked and learned. One fourth of the general population is highly suggestible, and can simply be told to have post-hypnotic amnesia, for example, which is a dissociation of current conscious experience from recent memory (Hilgard, 1977). Equally large numbers of people may be convinced for a while that they lack control over their own body, and experience paralysis of the arms or legs. The same quarter of the population can be suggested to experience analgesia, sensory hypersensitivity or mild hallucinations. Hypnosis is closely akin to other states of absorption, such as being entranced by a fictional story or a film (Hilgard, 1977; Baars, 1988; 1997). Closely related phenomena like placebo effects occur every day. They require no hypnotic induction at all.

Spontaneous dissociations are common during major life changes. Adolescence often involves experiences of dissociation. From forty to seventy per cent of college students are reported to have periods of marked depersonalization (a loss of a sense of self) and derealization (a loss of a sense of reality about the world) (DSM). In most people those experiences fade with the beginnings of adulthood. But long-term dissociativity may last a lifetime, much like suggestibility (Hilgard, 1977).

These are fairly ordinary kinds of dissociation. Clinically severe cases can occur after trauma, in life-changing conditions, wars and disasters, cult indoctrination, and of course in famous conditions like fugue, psychogenic amnesia and multiple personality. It is unlikely that Skinner's inner divisions were so severe,

though his Dark Year was no doubt traumatic. He clearly functioned well all his adult life. Dissociations in varying degrees are as pervasive as the flu.

Finally, dissociations can be produced by beliefs, even by words. Soldiers in combat commonly have a sense of personal invulnerability, quite separate from reality. Physicians in training are exposed every day to death and disease, and must develop a sense of personal distance. They both use words and beliefs to separate themselves from the reality. Religious zealots may sacrifice their lives and endure pain and privation in the calm certainty that God will reward them. Religions provide the words and doctrines that can help insulate believers from their experiences.

Beliefs are powerful engines of dissociation. They do not require religious faith; secular beliefs can be equally effective. Beliefs distinguish our species as much as language, music or opposable thumbs. We are not Homo sapiens but Homo credans, the believing hominid — and that includes scientific beliefs like behaviourism.

The Dissociations Encouraged by Behaviourism

All human beings talk to themselves in private. The inner voice was thoroughly explored in nineteenth-century novels and poems, and became a mainstay of stream-of-consciousness fiction. Behaviouristic psychology never admitted the existence of conscious inner speech, but tried to look for its behaviouristic version — covert verbal behaviour. The trouble is that laryngeal muscle movements are not the same as inner speech, and behaviouristic psychology made it impossible to simply ask people what was going through their minds. When psychologists began systematically to ask people about their inner speech, the evidence turned out to be strikingly regular and revealing (e.g. Singer, 1993; Ericsson and Simon, 1984/1993). Though it was perfectly useful, inner speech reports still suffered from a taboo even after the passing of behaviourism. Today we can see images of inner speech in brain scans (Paulesu *et al*., 1993). But it has taken a century of unnecessary controversy to overcome behaviouristic objections to what has been known by poets since Homer.

The same thing may be said about all the reliable features of mental life, explored with great delicacy in James's *Principles*. Imagery, meaning, planning, goals, expectations, memories, feelings, acts of will, desires, all fell under the axe. Starting in the 1970s cognitive psychology began to recover many of these fundamental concepts, treating them as inferential constructs based on public evidence (Baars, 1986). That strategy worked quite well with imagery, meaning and memory but it did not take hold for other psychological terms like consciousness, volition and self. It has taken a decade of sophisticated brain imaging to show how unavoidable those ideas really are (Baars *et al.*, in press).

Well, consider — if you are a proclaimed expert on human behaviour, and doubt the existence of imagery, what about your own imagery? Your own inner speech? Your own ability to recall conscious events from the past and to imagine

the future? These are routine mental operations. How can you experience them on the one hand and deny them on the other?[3]

S-R Translation as a Dissociative Technique

Language can be a powerful tool of *dissociation*, just as it is the premier means for *association* in humans. A language like English is enormously rich in its psychological references. Behaviourism insisted on translating all the common psychological terms into putatively more objective 'stimulus response' terminology, restricted to publicly observable events only. This results in the kind of distancing we get from speaking entirely in euphemisms. But when distancing euphemisms are consistently applied to our own experiences they may help block our access to our own feelings, thoughts, moods, impulses, images and inner speech.

As George Orwell wrote in another context in 1946:

> People are imprisoned for years without trial, or shot in the back of the neck or sent to die of scurvy in Arctic lumber camps: This is called *elimination of unreliable elements*. Such phraseology is needed if one wants to name things without calling up the mental pictures of them.

Obviously behaviourists had nothing to do with such activities. But the power of euphemism is the same. It removes us from the most evocative experiences we have. Euphemisms work, which is why they are the common currency of cultural dissociation all over the world. But to understand human psychology do we really want to be so remote from our subject?

For the better part of a century psychologists were trained to translate every idea about human beings into putatively observable stimulus–response terms. In some ways that is good scientific training, because it compels us to think about testable ideas. But if we exclude inferred concepts — like the entire vocabulary of psychological common sense — we simply begin to falsely concretize that which is abstract and inferential. We start to look in all the wrong places. Not surprisingly, the behavioural research programme became narrower and narrower in practice, although it continued to make global claims. Since the height of behaviourism, almost the entire vocabulary of subjective experience has come back, in more testable forms, and with better theoretical ideas (Baars, 1986; 1988; 2002).

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[3] People tend to be wrong when asked to describe their own stream of consciousness without carefully sampling it. This can easily be shown by having them monitor thoughts and feelings at the time they are happening. When people immediately write down their conscious experiences they are often surprised by the amount of time they spend thinking about 'current concerns', repetitive worries and desires, social role playing, inner speech, imagery, daydreams, intrusive and unwanted thoughts, and the like (Singer, 1993). This raises the possibility that the avoidance of self-observation by behaviourists may not be a dissociation so much as a simple neglect of careful self-observation. The words of commonsense psychology — thoughts, feeling, desires — serve to label and recall our moment-to-moment conscious contents. If we lose those words we also lose the ability to easily think about our own experiences. The behavioural taboo against consciousness may have been enforced by simple neglect.

I also continue to wonder what effect behaviourism had on generations of college students who were taught — and often still are — that their own conscious experiences have no real significance. Is it harmful to believe that during the roller-coaster years of adolescence? Does it lead to greater alienation from self and others? Do young people lose the chance to understand themselves better? Consciousness is humanizing; we have no empathy with dead rocks and sticks. Does it follow that purging consciousness is dehumanizing?

When B.F. Skinner took his daily walk to Harvard reading Beaudelaire, what happened when he crossed the threshold of Memorial Hall? Did he switch perspectives? Or did the habits of thought inculcated by behaviourism have more pervasive effects on his understanding of his own thoughts, images, inner speech and feelings?

Was Skinner Open to Consciousness After All?

Skinner's defenders would no doubt argue that he did suggest a distinction between subjectivity, which did not exist, as opposed to private experience, which was just covert behaviour. They are right; the trouble is that only the most careful readers of Skinner's work were aware of this subtlety. To working psychologists and to the general public these subtle qualifications did not exist. The broad effect of Skinner's public posture was to support the global taboo against consciousness for five decades.

In early science, errors are not the exception but the rule. Physics began with Aristotelian ideas about gravity and planets, many of which were wrong. Biology started with Lamarckian ideas of inheritance, equally wrong.

As Karl Popper has written:

> The history of science . . . is a history of error. But science is one of the few human activities in which errors are systematically criticized and fairly often, in time, corrected. This is why we can say that, in science, we often learn from our mistakes, and why we can speak clearly and sensibly about making progress there (Popper, 1974).

The only protection against error is vigorous debate and an open mind. Healthy science is self-correcting — with luck, evidence and people who are passionate about finding the truth. Taboos inhibit debate and undermine that much-needed process of self-correction.

It is important to note, as Skinner often said, that 'behaviorism is not the science of behavior but the philosophy of that science'. That is, behaviourism is a system of assumptions, including determinism and stimulus–response causality. But as a philosophy behaviourism is also unfalsifiable; there is no experimental result that cannot in principle be explained *post hoc*. When asked to explain any existing behaviour Skinner would always point to the 'history of reinforcement of the organism'. But no one could observe that history. It was a circular argument, a self-verifying belief. That made it risky for an infant science to adopt. Wrong assumptions could not be falsified.

Only now, after seven or eight decades of behaviouristic influence are we able to return to the problem of consciousness with more confidence. The last decade

has seen a burst of remarkable research into the nature of consciousness, much of it from brain science (Baars *et al.*, in press). Obviously many questions are unsettled, but we are no longer avoiding them and there is steady progress on the evidence.

Many scientists now feel that radical behaviourists tossed out the baby with the bath-water. A glance back to William James shows 1300 pages of evidence on all the topics we are trying to understand again today. James was discredited by the behaviouristic movement for almost a century. But he is experiencing a revival, simply because a large and growing body of evidence points in that direction.

Utopian Imperatives and Soviet Behaviourism

People rarely engage in major denial without strong motivation. The early twentieth century found such motivation in idealistic utopianism. It is interesting therefore that a kind of indigenous behaviourism emerged in late nineteenth-century Russia and later in the Soviet Union, with extraordinary utopian goals. Soon after the Bolshevik Revolution it became known as the creation of the New Soviet Man. It is associated with the name of I.P. Pavlov, but Pavlov himself did not necessarily support the programme. At one point 'reflexology' (a method supposed to be based on Pavlovian conditioning) was to be used to create a new human being, one who worked for the welfare of Soviet society without the selfish incentives of capitalism (Pavlov, 1940). It was a dream backed by fantasy science, and for some years by the untrammelled power of the Soviet state (Baner, 1952).

There are striking parallels between Anglo-American behaviourism and the indigenous Russian variety. Although Pavlov was not a radical behaviourist, he was in his own way a utopian and hoped to explain all animal behaviour in terms of reflexes. Pavlov was greeted among intellectuals in Europe with a genuine utopian fervour, just as John B. Watson and Skinner were welcomed by Bertrand Russell and H.G. Wells among the founders of the Fabian Society in England. The idea that behaviourism reduced human beings to stimulus–response machines without consciousness did not seem to bother them. It was outweighed by the dream of human perfectibility by associative conditioning. That was after all the point of Skinner's utopian novel *Walden Two.* Part of the secret of behaviourism's success may have been its ability to mobilize intense idealism among its followers.

It must mean something that in the public eye Skinner became the best-known living scientist of any kind from the 1940s to the end of his life. In an age of DNA and drifting continents, quantum mechanics and Big Bang cosmology, in a time gripped with nuclear ambivalence, Skinner's carefully groomed public persona was always confident and cheerful, armed with ready answers, prepared to tell the world about the great new science of behaviour analysis. Judging by his public image he had no boyhood, no youth, no struggle for self-definition, no youthful dreams abandoned, no middle-aged doubts, and no terror of old age. But Skinner knew better, and he left the keys to his life's secret in his own writings.

Some Implications of the Double Life

Skinner's own autobiographical comments show a striking division between the private and public person. B.F. Skinner was much too well-functioning to suppose that he suffered from a major dissociative disorder, but his life suggests that radical behaviourism has psychological sequelae, that denying one's own consciousness in public while exploring it in private does not come without costs.

These inner conflicts have a wider significance. Skinner represents in one person the contradictory demands of a movement that dominated the twentieth century in Anglo-American philosophy and science, and which continues in other forms today.

A harsh critic might see the twentieth century as a time of lost opportunities. Psychologists could have built on the magnificent foundation of James's *Principles* (1890/1983) — by wide consent the greatest psychological work in English. Instead, they chose to evade some of the most fundamental aspects of human existence. Today we are rediscovering the lost fundamentals. As the sciences of mind and brain come back to their natural subject matter, it will be important to set the historical record straight.

This line of thought suggests wider cultural questions. Why was the purge of consciousness so popular? Why did progressive intellectuals embrace a radical rejection of the conscious life? Did behaviourism reflect the mechanistic fantasies of early twentieth-century modernism, a way of liberating ourselves from all the messy baggage of human frailty? Did it serve to authenticate psychology among the physical sciences at a time when it was a new and insecure profession? Did it promise the public a revolutionary utopia, as Watson, Skinner and Pavlov believed? Or was it a rebellion against the dominance of religion? I believe it may have been all of them.

The double life of B.F. Skinner is a key to the twentieth century.

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