The Science of Fiction Writing

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> The "Art of Fiction" series in the *Paris Review,* "Writers on Writing" series in the *New York Times,* and other sources were a bundle of stimuli for the following response from a behavior scientist and a fiction writer.

Writing Fiction is Behavior. Traditional mentalistic psychology, Freudian psychoanalysis, ubiquitous brain science, and foggy speculations on the "mysterious" creative processes do not offer good scientific explanations of writing fiction or nonfiction. B. F. Skinner's natural science of behavior, on the other hand, has a potential to explain writing of all kinds. To begin with, a microsummary of Skinner's science: Behavior, not the mind, is what needs to be understood and explained; all behaviors are a product of genetic factors, past learning, and current environmental conditions. The last two are the domains of the science of behavior. Positive consequences received in the past strengthen behaviors. Behaviors persist when such consequences are maintained. Environmental conditions under which the behaviors have been reinforced become the controlling stimuli that evoke the same or similar behaviors in the future. Writing is behavior, subjected to the same laws of behavior; it has no mysterious or unique causes. Skinner wrote that if art, music, fiction, poetry, science, scholarship, and invention are important for human kind, then we should look afresh at their sources.

Fictions come to the writers. In scientific terms, variables that cause writing converge on the writer. Jack Kerouac wrote about submitting himself to everything, listening, being open. Because of the favorable (reinforcing) consequences of doing so, authors have learned to submit to the forces that shape their writing. A popular view of writing, rooted in Freudian psychoanalysis, is that unconscious forces shape fictions. For a behavioral scientist, fiction does not spring from the unconscious mind that remains inaccessible to scientific analysis. Writers do not dig stories up from their dubious unconscious. The mind, the unconscious, the brain of the pop neuroscience are the typical reservoir of unknown causes of behavior. Writing of any kind, fiction included, is behavior controlled by variables that may now be poorly understood, but eventually understandable. An impediment to this understanding is the tendency among some writers to mystify the writing process. Science will find the causes of writing in the unique learning history of the writer.

Writers write because a unique set of stimuli, associated with past reinforcement, impinge upon them. Unlike nonwriters, writers are especially sensitized to such bundles of stimuli because of their past experiences, combined with potential genetic factors. Writing is one form of unique response authors give to such stimulus bundles. In the writers' personal history, writing has been highly reinforced, and therefore, the probability of writing on an intense daily schedule is very high. How highly reinforced? High enough to write, write, and do nothing but write, even sequestering themselves to write for weeks, as Jen Gish describes and many authors have confessed (NY Times, December 4, 2000). Successful writers write every day, write for many hours each day.

As John Cheever told Saul Bellow (NY Times, October 11, 1999), favorable reader responses kept him going. Reinforcement in the form of financial gain can be powerful, but writing is its own reward, as many writers have found. Truman Capote found (Paris Review 16, Spring-Summer 1957) that the infinite surprise of "the twist, the phrase that comes at the right moment out of nowhere, is the unexpected dividend, that joyful little push that keeps a writer going." A good sentence, a tightly-knit paragraph, a vivid description, a lovely character: writing is full of such immediate reinforcements for the writer. If writing itself is not reinforcing, writers wouldn't continue to write while collecting hundreds of rejection slips from publishers. Stimuli that lead to writing grab them, and hold them until they sit down and write. In behavior science, the phenomenon of antecedents causing a behavior, such as writing or talking, is called stimulus control. Stimuli come to control behaviors only because of the past reinforcement under similar stimulus conditions.

Stimulus control is mostly responsible for getting the writing activity going. Many writers suggest stimulus control in their own words; some give specific examples. Toni Morrison talks about "controlling images" that get her going with her writing. She used an Edvard Munch painting "almost literally" to describe a scene that was otherwise difficult to describe (The Paris Review 128, Fall 1993). Ann Beattie, too, may start with a visual image, like the sight of a hooded man on the street outside her house that prompted her to begin writing a particular story. In his essay, *Reflections on Writing*, Henry Miller wrote that he could show "how the most remote, the most artificial stimulus produced a warm, life-like human flower." Stimuli writers experience may be observable or covert; covert stimuli may often be verbal and verbally linked to other experiences, words, sentences. Morrison may begin with an idea, which may become a question: Why are younger women not as happy as the older? The question can causally generate a long verbal chain.

Many writers have contradicted the popular myth that creative minds generate fiction. If minds did that, no one would know what writing is or how to teach it. Writers talk about stories or themes or characters coming to them; what comes to them is a bundle of current stimuli linked to stimuli encountered in the past (“experience”). We can take Garcia Marquez’s word on this. He said that when he knows he is going to write the greatest book of his life, “I stay very quiet, so that if it passes by I can capture it” (The Paris Review 82, Winter 1981). Rushdie believes that “creativity is just seeing what shows up” (Paris Review 175, Summer 2005). To Edith Wharton, either a situation or a single figure that suddenly “walks into the mind” may trigger a writing response (Confessions of a Novelist, 1933). The feeling that something or someone walks into the mind to prompt writing is the effect of an activated behavioral link to certain experiences. To John Cheever, “characters and events come simultaneously” (The Paris Review 67, Fall 1976). Consistent with the behavioral view, Morrison says that “Authors enter a place where they become a means, a conduit for the story” (Paris Review 128, Fall 1993). The arrival of a fiction is the gathering of a stimulus pattern; once this happens, it compels the writer to write it. Morrison said that “If it arrives you know, . . . you have to put it down” (The Paris Review 128, Fall 1993). When asked, ”Were you looking for a plot?,” writer DeLillo said, “I think the plot found me.” He then talked about plots “asserting themselves” (The Paris Review 128, Fall 1993). Anton Chekov is reported to have said that a story can come out of the wall if you stared at it long enough.

Psychoanalyst Carl Jung didn’t think that artists choose a plot because they are endowed with free will. Jung believed that it is the art that realizes its supreme purpose through the artist. But art is not an entity with a purpose, it is a set of conditions and consequences that generate and sustain artistic behavior. Writers do not chose stories, stories chose them; Charles Bukowski said it in a beautiful poem:

> When it is truly time,
> and if you have been chosen,
> it will do it by
> itself and it will keep on doing it
> until you die or it dies in you.

(Sifting through the madness for the word, the line, the way: New poems.)

Not all writers get the fictions “piped-in,” as Alice Munroe puts it. She said, “I don’t think I have this overwhelming thing that comes in and dictates to me” (Paris Review 134, Summer 1994). Even so, some stories easily come to writers like Munroe who typically don’t see the story passing by them. She may wait for a story to turn up, and it always does for her.

Whether a story is piped-in or dredged out is a feeling generated by the strength and completeness of the stimulus complex that controls their writing. The writer who is under stronger and more comprehensive stimulus control is likely to feel that the story was piped-in, came full-fledged, easy to write. If the stimulus control is weak or partial or fragmented, the writer feels that writing is difficult, takes place in spurts, is time consuming. A draft—an initial collection of verbal stimuli--written with ease or difficulty, begins to more effectively control the writer's behavior than any ideas about the story. In any case, the writer must learn to put the pieces together, organize, accept or reject what is piped in, and fill-in gaps in what has partially arrived. These are skills that the writers have learned and nonwriters have not.

Drafts control revisions. The first draft is a bundle of stimuli that controls writers' subsequent behaviors ("revisions'). Each repeated revision brings writers under the control of progressively subtle, hither-to missed, and detailed features of what they constructed on paper. Each revision is also a pattern of new stimuli, evoking new responses from the writer. Therefore, new ideas about the story do not cause revisions. Prior drafts cause subsequent revisions. The author's new ideas are only responses to what is written. Don DeLillo (Paris Review 128, Fall 1993) talks about a zone of abandonment, a stage of writing in which each revision is controlled by what he wrote until then.

Autobiographical or imagined is a false distinction. Writers are divided on whether fiction should be based on personal experience or imagined with no relation to real people. Chekov believed that everything he knew and wrote about men, he learned from himself. James Baldwin (Paris Review 81, Spring 1984) said that a writer "writes out of one thing only—one's own experience." Henry Miller wrote in his essay, *Reflections on Writing,* that "Every line and word is connected with my life, my life only." Munroe's earlier stories were based more on personal experiences than her later works (Paris Review, 134, Summer 1994). For some, writing is a way of dealing with their personal experiences. For Doris Lessing, for example, writing is *organizing* her personal experiences, a search for new meaning in old experiences (Lessing, NY Times, June 4, 2001).

A few authors say that they never use personal experience, people they know, and events that happened to them, their family or friends. Morrison is emphatic about this. She said that "I never use anyone I know. . . I don't do what many writers do " (Paris Review 128, Fall 1993).

There are of course, writers like Raymond Carver, who say that the best thing to do is to "use a little bit of personal experience combined with a lot of imagination" (Paris Review 88, Summer 1983). For Truman Capote (Paris Review 16, Spring-Summer 1957), a real incident may "suggest a little," although

he recognizes that everything a writer writes is in some way autobiographical. Faulkner combined experience, observation, and imagination each in variable proportions (Paris Review 12, Spring 1956). Although differing on whether fiction is best based on one or the other or a combination of the two, most authors accept a distinction between personal experiences and imagined themes. But this distinction is empirically unsustainable.

Munro calls stories based not on personal experiences “observational” (Paris Review 131, Summer 1994). Observations, however, are no different from personal *life* experiences. Perhaps the writer observes not herself and the people in her life, but unrelated people. In constructing fiction, she may use what she learns from such observations. In a behavioral analysis, writers can write only about their own experiences, including observations of people not involved in their lives. If writing is a special kind of response to uniquely patterned stimuli, people observed or people writers know more intimately, are all the same—both are patterned stimuli that cause creative behavior.

Common sense says that something is fiction because it is imagined. The reasoning goes that what is imagined is not real, therefore it is fiction. There is no fiction in fiction, however. “It always amuses me that the biggest praise for my work comes for the imagination, while the truth is that there’s not a single line in all my work that does not have a basis in reality, “ said Garcia Marquez (Paris Review, The Art of Fiction, 69). Doris Lessing wrote in *Under My Skin* that “fiction makes a better job of the truth.” For Ralph Ellison, good fiction comes from what is real, but reality is difficult to come by (Popova’s brainpickins.org). Tom Wolfe thought that fiction had to be plausible, which may not be true with non-fiction (Popova’s brainpickins.org). Calling stories and novels fiction in the sense of unreal is solecism. Observations and more intimate personal experiences stimulate imagined or constructed themes, events, and characters. Therefore, *imagined* is as real as any personal experience, may be an extension of it. Imagined is life lived emotionally and spatially a bit farther from the author. Marquez and Morrison and Munro and Kafka imagined different things because their personal experiences were different. Pablo Picasso said that “Everything you can imagine is real.” What is imagined is rooted in the creative person’s learning history. Remotely or weakly sensed reality may be imagined. Scientists and artists imagine this kind of reality all the time.

Fiction and its characters control the writer. As a pattern of stimuli, events and the people in a fiction exert control over the writer. Rushdie said that each book teaches how to write it (Paris Review 174, Summer 2005). Once characters stand up and begin to move, William Faulkner could only trot behind them with a paper and pencil and put down what they said and did. Some of E. M. Forster’s characters

ran away with him. Characters demand that the author do certain things. Edward P. Jones said that if the story he was writing called for a certain action, an action he even hated (like abandoning a baby in a street corner), he just had to write it in (Paris Review 207, Winter 2013). When the characters are shaping up, Isabelle Allende hears their voices and sees them do things she had not planned or imagined (Popova's brainpickings.org).

For John Cheever, however, characters do not take on their own identities. For him, the idea of "authors running around helplessly behind their cretinous inventions is contemptible" (Paris Review 67, Fall 1976). But he still recognizes that authors take "surprising turns" and respond to "light and darkness—of any living thing." Morrison, who believes in controlling the characters she creates, acknowledges the duality of it: she knows that some characters may do things she doesn't want them to do. She had to ask a chatty character of hers to shut-up; otherwise, the character would have overwhelmed everybody (Paris Review 128, Fall 1993). Authors may not chase their characters, but they do respond to stimuli that include those characters. As Ellison (Paris Review 8, Spring 1955) put it, the structure of the fiction controls the characters. This structure is a world of verbal stimuli that control more and novel verbal responses.

A piece of writing is a bundles of interconnected verbal stimuli. Obviously, the first sentence of a story that the writer puts down on paper will be caused by variables unrelated to print. That sentence, once on paper, helps generate additional sentences, although the writer is never free from non-print stimulus control. Language is a bundle of individual links in a long chain of cause-effect variables. Each word is a link to other words, each sentence a link to other sentences, a phenomenon Skinner called *intraverbal control.* Each sound, sight, and smell is also a link to words, which are then links to many more sounds, sights, smells, and sentences.

Many writers have recognized that fiction writing is possible because of word- and sentence-linking in the manner of Skinner's intraverbal control. Rushdie describes his own and Joseph Heller's experience in taking a cue from a single sentence to create more sentences. One sentence Heller wrote in his Catch-22 told him where his novel was going (Paris Review 174, Summer 2005). Writers coast on this causal link of intraverbal control. DeLillo said that he rides on "his own sentences into new perceptions" (Paris Review 128, Fall 1993). Ann Beattie goes from sentence to sentence, and then a sentence might have an unexpected quality, which becomes a pivotal sentence (Paris Review 196, Spring 2011). A pivotal sentence is the one with strong intraverbal control, capable of generating many and varied sentences. Amy Hempel said that she doesn't write one sentence and then look out to the world to snatch the next;

instead, she looks back at the sentence she just wrote to get a clue to the next (Paris Review 166, Summer 2003). Rereading the sentence one wrote is the most effective way of establish the verbal link to the next sentence. Edward Albee said that “writing has got to be an act of discovery. Finding out things about what one is writing about” (Paris Review 39, Fall 1966). This feeling of discovery writers experience is an effect; it is caused by intraverbal control that can help generate surprising verbal behavior.

Once the first paragraph is written, Marquez finds that “the rest just comes out very easily” (The Paris Review 82, Winter 1981). It’s the intraverbal control—prior words controlling the subsequent words in an endless cause-effect chain—that makes the rest so easy. For Doris Lessing (The Paris Review 106, Spring 1988) the beginning of writing may be a bit jagged, but when something clicks, the writing becomes fluent. What clicks is the intraverbal control, the primary cause of fluency in writing and speaking. For Joan Didion, a certain picture of a story tells the writer how to arrange the words; she says that “it tells you, you don’t tell it” (Maria Popava, brainpickings.org). A physical stimulus might initially suggest some words or their arrangements, but those arranged words help arrange more words.

Inspiration is stimulus linking. Common sense puts inspiration on a pedestal, but with ironic aptness, creative people routinely smash that pedestal. Morrison wouldn’t be a writer if she “waited for inspiration” (*Time*, January 21, 1998). Artist Chuck Close leaves inspiration to the amateurs, and just shows up to work. Isabel Allende’s advice? “Show up, show up, show up, and after a while the muse shows up, too” (Popova’s brain pickings.org). Rushdie just gets up, goes downstairs, and writes. Authors give a simple advise on writing well: write, write every day. Writing is work. It may be tedious, but it produces flashes of pleasure that reinforces the hard work. Behavioral science has shown that a behavior that is reinforced only occasionally, especially after a long spell of no reinforcement, is actually more firmly established than the behavior that receives continuous reinforcement. Such intermittently reinforced behaviors persist in face of even punishing consequences (such as multiple rejection letters).

Inspiration is useless in understanding how and why people write; it does nothing to writers. Instead of trying to get inspired, writers immerse themselves in a verbal world. Susan Sontag says that the “impulse to write is almost always fired by reading”(NY Times, Dec 18, 2000). To read is to come under intraverbal control. Writing begins to take its shape once the writer is surrounded by linked verbal stimuli. In his own words, Close describes intraverbal control in creative work: “All the best ideas come out of the process; they come out of the work itself. . . if you just get to work, something will occur to you and something else will occur to you and something else that you reject will push you in another

direction. Inspiration is absolutely unnecessary and somehow deceptive." If inspiration came to Picasso, it had to find him working. For the creative person, work itself is the locus that offers the necessary link to creative work. Work is a bundle of linked stimuli, evoking linked and novel responses.

Ego has very little to do with. Many writers agree with Cheever who said that the "writers are inclined to be intensely egocentric" (Paris Review 62, Fall 1976). Big ego may lead to suicide or loss of friends, but not to writing or painting. Ego may encourage writers to think they can write, as E.B. White suggested. If ego means a desire to be famous, as it did to George Orwell, then it refers to social reinforcement. Stories that come to the authors bypass their ego. Some writers assert that they choose to write, as has Richard Ford (NY Times, November 8, 1999). But then one has to ask, what is choice? Choice is facing two or more competing set of stimuli, leading to competing sets of behaviors, but reacting to the strongest of the stimulus complex. This is not choice. Others assert that they are driven to write, as did Somerset Maugham. Faulkner and Orwell believed that nobody would write unless an irresistible and unknowable demon drove them do it. Although being driven is not the opposite of choosing, neither assertion is a scientific explanation of why writers write. Writers are not hosts to demons that hand them a pencil and a piece of paper and order them to write. Writers are hosts to empirical variables that have converged on them in a unique pattern to produce unique effects—their writing. Writers' life and their learning history have made them especially sensitive to those variables. The consequences of their writing, especially the immediate emotional consequences of finishing a story, keep them going. Favorable long-term social and other kinds of consequences keep them going farther. Woody Allen has said that "that you can create is a kind of nice accident," (Paris Review 136, Fall 1995). Susana Medina (3:AM Magazine, December 4, 2013) said that writers are a cluster of everything they have encountered. We know that Morrison thought of herself as a conduit for stories. These observations agree with Skinner who wrote that there is no ego or "I" to take credit for one's actions, simple or complex, low or lofty. "A person is not an originating agent; he is a locus, a point at which many genetic and environmental conditions come together in a joint effect" (Skinner, 1974; About Behaviorism). A writer is a locus where the variables that cause writing come together. Readers are happy that writers are such a locus.