Is it Possible to Do Research on the Stream of Consciousness?

The Stream of Consciousness was introduced by William James over 100 years ago. It means that our consciousness moves ahead with continuity. James suggested that this theme can serve as a major focus for psychology. (James, 1890). Isn’t it strange, though, that psychology almost never speaks of this dimension. We might talk about emotions, perceptions, actions or desires, but almost never about “the inner thought flow.”

James foresaw the difficulty of studying this phenomena. He stated that to capture the Stream of Consciousness conceptually was like trying to study a moving river by capturing it in a bucket. Another metaphor that he proposed: “It’s like trying to try to study a snowflake by capturing it in your hand.” Conceptual language turns a moving current into “a string of pearls.” (Steven Pinker, 2007). The natural reality is so deformed by the method of study that we can easily renounce the ambition of making a scientific inquiry that attempts to describe the Stream of Consciousness and how it works.
Language and the Stream of Consciousness

Language is highly limited and sometimes even insufficient and deforming when the task is to represent the Stream of Consciousness.

In fact, if we look at what has happened regarding the development of this concept, we will notice an interesting point. **The Stream of Consciousness, although neglected by psychology, has become of great interest in literary analysis.** Authors like James Joyce (1914) and Virginia Woolf (1925) are constantly cited as the pioneers of this avant-garde literary technique. Molly Bloom’s stream of inner thoughts, in Joyce’s Ulysses, reveals her preoccupations of sexual rivalry with other women, and then with memories of the first erotic encounter with her husband, Leopold Bloom. This takes place while she is lying in bed, which means it represents her Stream of Consciousness.

Virginia Woolf describes Mrs. Dalloway’s thinking as she meanders from theme to theme of inner concern – for example, why she married a “correct” but relatively uninteresting Parliamentary Deputy rather than her younger and more passionate lover, Peter Walsh, or how the intelligent governess, Kitty, was stealing her daughter from her as well as making her feel defensive about being a wealthy woman. These and other issues were elaborated in her inner stream while she was walking through a London park in order to buy flowers for an evening party. Robert Humphrey’s book, *The Stream of Consciousness in Fiction*, a classic work in this field (published in 1956), analyses excerpts from Joyce, Virginia Woolf, Katherine Mansfield, William Faulkner and several others.

We may ask ourselves the following question: If literary works can be discussed in terms of the Stream of Consciousness, why hasn’t psychology confronted and studied this natural event? A major reason is that it is difficult to give examples. The observational base, needed in any scientific study, may seem impossible to register, as William James said. One book that attempts to give a model for inner thoughts is Douglas Hofstadter’s *I Am A Strange Loop* (2007). He suggests that the sequence of inner thoughts can be likened to “a loop” that turns back on itself. However, in this book as well, there are absolutely no examples of the Stream of Consciousness to create a grounding, or observational basis, for this analysis. So this is the major obstacle for the science of psychology! Modern fiction overcomes this obstacle. The story written on paper can give a string of words that are considered so close to the Stream of Consciousness that the reader can say to himself, “Yes, our inner world is sometimes like that.” Such literary works, therefore, can also be used by science.
But how can we create a scientific psychology regarding the Stream of Consciousness? Science requires that we create our models of explanation by first looking at and registering the “real situation,” that is, the Stream of Consciousness.

But we find ourselves blocked in an impasse. How is it possible to observe and register this hidden stream of thoughts, emotions, intuitions, sensations, attitudes, desires and repulsions, when this can only occur at the moment that each person is alone and not being observed by another? I have not read anything in psychology that faces these deep epistemological questions. And how can they be resolved? (See Liss, 2007a, 2007 b, 2008, for articles on the Stream of Consciousness that treat the epistemological dilemma in greater depth.)

The fourth article on the Stream of Consciousness, “Three Extracts: Solitude, the Uncertainty of Love, Self-Reproach for What Has Not Been Accomplished,” (Liss, 2009) tries to cut through this Gordian knot of epistemological validity. The article presents three examples of the Impasse within the Stream of Consciousness. Is this material epistemologically valid? First, let’s see how the material was collected. Three people wrote down, using memory, their repeated negative thoughts, that is, their Impasse, trying to reproduce in their writing the thought sequences as they actually occurred when alone. All three people have done regular psychological work regarding their inner states. Of course, this method is limited because words cannot transmit the enormous non-verbal part of the Stream of Consciousness. In addition there is a necessary deformation and loss of detail due to the fact that the thoughts are reproduced from memory. In fact, we must admit that the method alters the natural event. Science has already faced a similar problem: Just like the movement of an electron is deviated by the photon that is sent in to observe its dynamic, the very act of writing creates a deviation from the natural Stream of Consciousness. The Stream that is written down is more continuous and coherent than the Stream that flows through the mind when there is total aloneness and immobility. Despite these limitations, already presented in previous articles, we will profit from the material of these three people. By reading the original material (op. cit.), the reader can decide for himself whether this written reproduces, at least in part, certain elements of “the natural system,” that is, the Stream of Consciousness which is experienced in total aloneness.

Each of the three people who contributed to the above cited article, “Three Extracts,” wrote about 30 lines of inner thought. For each one the extract revolved around one central theme. The first person wrote of the loneliness at night when the house is empty. The second person wrote of the
turmoil regarding the dilemma as to **whether she should contact a man** with whom she had a brief sexual relationship, with the Impasse revealing an intense self-denunciation for even imagining that this man could be interested in someone like her. This is an especially poignant example of how thoughts connected to desire and contact can be turned about “retroactively” to conclude with insults against oneself: “How can you be so STUPID as to imagine that he would want to be with someone like you?” (See M.C. Escher’s lithograph, “The Dragon,” for the visual image of a dragon eating its own tail, which gives a picture of this inner retroaction of self-reproach. Escher, 1959; Liss, 2009)

The third person’s inner sequence turned around **the question of getting things done**, once again with severe self-criticism, this time for disorder, incompetence, being “an imposture” and feeling excessive fear.

It is interesting to note that Joyce’s and Woolf’s examples of the Stream of inner thought, cited above, do **not** show such types of self reproach. In their examples, cited as classical works of the
Stream of Consciousness, (Joyce, 1914; Woolf, 1925), the thought sequences seems to be like “mental tourism,” with thoughts jumping from island to island (or from theme to theme) in a helicopter. In contrast, the three people sharing their Impasse, in the article “Three Extracts,” show a deep level of continuity and profundity in their inner sequences. In fact, their revelations manifest a particular courage in presenting thoughts that can be found universally, but that would almost never be revealed to another person because they show a deep personal truth of anxiety, humiliation or self worthlessness. As a literary analogy, the three extracts they are closer to Kafka than to Joyce and Woolf.

The Thoughts Circle Around a Theme of Incompleteness

What is a common dynamic in all Streams of Consciousness? Each extract presents a series of thoughts that turn around an issue in which there is “incompleteness.” In the characters presented by James Joyce and Virginia Woolf, there are usually 4 to 6 thoughts that touch each issue, with the mind then jumping to other themes. In contrast, the three descriptions of the Impasse collected in our research, “Three Extracts,” show more than 12 sequential thoughts circling around each theme. Likewise, in the literary works of Franz Kafka (The Castle) and Anton Chekhov (Ward Six), thoughts can create obsessions that last all night. We are not saying that the Stream of Consciousness always involves a long sequence around a theme, but these examples show that this can easily happen and the sequence become an obsession. In addition, people who are stuck in an Impasse show “negative retroflexion” of self-accusation and doubt. The person feels entrapped and concludes, “I can’t shake it off.” The thinking becomes tenacious, even though it feels unacceptable, excessive, “too much.”

This type of prolongation and intensification of the negativity is different from the Joyce and Woolf examples, where the inner sequence of thoughts seems tepid and undramatic. It is possible that these two authors wanted to show the thoughts that occur in “normality.” In any case the inner life of their protagonists seems a bit superficial, like island hopping or zapping with the telecommand. In contrast, the thinking that revolves around a deeply felt impasse is all knotted up, contorted, stressful, tenacious and self-lacerating.

A Tank in the Garden of the Mind

Naturally, we would like to know how to get out of this trap. But this is jumping the gun. Our basic goal, for this article, is more humble. We are merely asking ourselves, “What is happening, and why?” The answers to these questions will not resolve the problem of continuous anguish. But it will at least give a useful perspective for more deeply understanding ourselves since we are dealing with universal human tendencies.

The first point to understand is that inner thoughts come to mind with heightened intensity when we are alone. This is called Monadic consciousness, and is totally different from Dyadic consciousness that takes place when we’re communicating with other. (Tronick, 2005; Liss, 2007)
There is an intermediate state that occurs when we’re actively doing something. If the task is very engaging, there are few “background thoughts” that enter into our consciousness, but if the task is routine, the deeper Self thoughts coming from Monadic consciousness can perturb our consciousness, such as, “This is so boring, I would like some excitement.” “Why do I have to do such routine things? Life should be better than this!” Or else the unoccupied segment of the mind turns to personal incompleteness: “I live such a lonely life.” “My mother is sick. But why is it always me who has to help?” “I’ll talk to him tonight about his attitude. But he never listens.” Mental knots are often in the background and keep humming away even during our daytime activities.

The second point to understand is that Monadic consciousness, at times, can show itself to be extremely powerful. The force of consciousness is more like a tank moving forward and crushing walls than like a kite flying in the wind. The garden of the mind is not protected. The onslaught of Monadic consciousness will not change with a simple wish, “I’d like this anguish to pass,” or with a positive reformulation, “There are so many people who care for me,” or even with a spiritual belief, “Life is precious. I should appreciate every moment.” We can become prisoners of our obsessive impasse.

The third point to understand is that giving words for our inner states can create some measure of containment of the anguish. How can words contain painful emotions? Sometimes, paradoxically worsen an emotion. If our minds repeat the exclamations, “I’m lost!”, “Betrayed!”, “It’s impossible!”, we can feel yet more submerged by the anguish and impotence.

Nevertheless the psychoanalysts are right in claiming that giving language to difficult inner states can be of great benefit. Sometimes the phrases can even help lift us out of the Impasse if the inner visceral force is not too strong. For example, imagine we feel ourselves weighed down by a particular uncertainty, and then that our thoughts change direction: “If I can think over this fear, maybe I can calm down... Maybe I’m exaggerating again.”

Language can especially exert its beneficial force by means of the metaphor. The metaphor adds punch to our inner thinking. A vibrant metaphor that expresses an inner state – “It’s like a volcano inside,” “I’m living in an emotional desert,” “I feel I’m drowning and nobody is throwing me a lifeline,” -- adds to the inner state and outer frame of reference. It is like creating a second thought system of structural correspondence that carries forward the initial thought. Why does the metaphor help? Because the metaphors can give an outer picture that describe some aspect of the
ineffable inner world. Even the word, “stream,” is a metaphor for the continuous movement of consciousness. We can hold onto the metaphor and thereby give our amorphous, fluctuating inner state greater definition and stability. In the most optimistic sense, an apt metaphor can help begin to metamorphise our inner states. Therefore, it can help transformation.

Now we will use the magic and the power of metaphor to give form to the almost invisible Stream of Consciousness. Jumping from thought to thought in a superficial way is like touristic island-hopping within the mind. What about the impasse in which thoughts are continuous and keep turning around a single theme? We can call that circling around the mountain. And when the thoughts fall into an impasse and keep repeating themselves again and again? We’ll call that falling into the hole.” Finally if the impasse is the thought of something that blocks our actions? Maybe it’s like throwing a monkey wrench among the spokes, or else like running into the wall. All of these metaphors can be regarded as exaggerations of our inner reality. But that is useful because our inner reality is often an exaggeration of the outer situation. Why is that? Because of subcortical brain dynamics. (See below.) The point is that the inner reality of Monadic consciousness can be powerful, tenacious, out of proportion and difficult to change.

The Unconscious is a Subcortical Motor: From Freud to Modern Brain Research

How can we explain this “unseen something” that is driving our thoughts and emotions forward, sometimes almost relentlessly? Freud used the metaphor of the iceberg to picture this invisible reality. He stated that seven eighths of the iceberg is unseen, thus giving an image of a hidden structure that is large and powerful, and that can make understandable how the “top of the iceberg,” that is, consciousness, can be under the control of hidden, unconscious forces. Freud also uses
another metaphor: That the conscious ego is like the rider on top of a powerful horse, which represents the unconscious impulses. (Freud, 1928)

But Freud could not establish the biological foundations of this unconscious power. He would have liked to and predicted that biology would some day give a fuller explanation of the unconscious mechanisms that underly our conscious turbulence, anxieties, depression and obsessions. But at that time research regarding brain mechanisms was only at a primordial stage. In addition, Freud made a misleading error. He proposed that the unconscious mechanisms that determine our conscious states could be brought into consciousness. For example, it was thought that dream interpretation could reveal the mechanisms behind our anxieties. In a more general sense, Freud proposed that “insight” could reveal the hidden, causal forces behind anxiety. Today’s research in brain dynamics shows that this cannot be the case. Thoughts and emotions are determined by processes that are deep in the subcortex of the brain and these subcortical processes never arise to consciousness. This is what modern brain research has revealed. (See also Heller, 2008)

**Higher Subcortical Neuronal Structures for “Patterns” and Lower Subcortical Chemical Discharges for “Energy”**

The brain is composed of an outer cortex and an inner subcortex. The regions of the outer cortex produce experiences of consciousness: posterior lobe for perception, temporal lobe for memory, parietal lobe for the consciousness of space and the frontal lobes for planning. (Hellman, 2003) This is a simplification. But it is sufficient for creating a rudimentary map that can be refined in later stages.

The subcortex shows a simpler neuronal architecture than the cortex. Therefore it cannot create consciousness in a direct way. But the subcortex is our gift from evolution. It began its development with the most primitive animals. Therefore, it contains all the basic mechanisms for our organic survival: the basal ganglia organizes our action, the amygdala determines our emotion, and the hippocampus registers our spacial connections with others. The above regions represent neuronal circuits which help us explain the patterns and organization of experience. But the subcortical brain also has other regions that can explain the energy of conscious and unconscious processes. These regions in the lowest parts of the brain create activating chemicals (neuromodulators) that are distributed throughout the brain and “wake up” the cortical and subcortical circuits that are needed for adaptation. (Edelman, 1989; Liss, 2003)

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<tr>
<th>Lower Brain Region</th>
<th>Neuromodulator</th>
<th>Functions</th>
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<tr>
<td>Tegmentum</td>
<td>Dopamine</td>
<td>Action for Reward</td>
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<tr>
<td>Raphe Nuclei</td>
<td>Serotonin</td>
<td>Bonding, Visceral Feeling</td>
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<tr>
<td>Locus Coeruleus</td>
<td>Noradrenalin</td>
<td>Vigorous action, mental focusing</td>
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<tr>
<td>Pendulopontine Nuclei</td>
<td>Acetylcholine</td>
<td>Learning, memory</td>
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In summary, conscious thought sequences, the “stream of consciousness,” created in the cortex, are riding upon the subcortical “patterns” and “energy”.
This creates a new perspective because we are often only aware of the neuronal brain patterns of information, perceptions and memories, but we neglect to consider the chemical energetic components that determine the intensity of a brain process as well as its prolongation over time. For example, night time images can become gigantic! “It was like a powerful beast jumping on top of me!” “The shadow got so big that I couldn’t escape!” Then, too, like a chemical wave that refuses to subside, the inner drama may become relentless: “I turned and twisted every way in the bed, wishing that the horror would go away, but no, it would stay and stay, as if wanting to torture me.” In summary, an awareness of the intensity and time duration of an inner theme, which is usually in the background of consciousness or, as William James says, “in the fringe,” point to the presence of chemical waves that energize brain dynamics.

Although this model is vastly simplified, it can help explain some basic features of Monadic Consciousness, that is, the Stream of Consciousness when a person is alone. Such explanations are useful for the clinician. When a person speaks of anxiety, fear, isolation or defeat, the clinician can create a picture of the subcortical dynamics that are under the surface, and keep in mind that only by recontacting these deep-seated emotional dynamics can they begin to change. In “Psychoanalysis and Neurophysiology,” (Liss,2006) this same point regarding the need for clinical “depth work” is underscored. We are justified by D.O.Hebb’s famous Law, “Neurons that fire together, wire together.” This means that the subcortical emotional networks must be sufficiently re-activated to produce change. Without such brain depth, the patient can conclude, “I talked about my problems, I understand it all, but nothing has changed.”
Our subcortical brain model of the emotional underworld is not only useful for the clinician but also for the patient. A patient overwhelmed by relentless inner thoughts that are out of control, that go on for hours and hours, like, “I feel like strangling him!,” or “I’m suffocating, I feel I’m dying!”, or “It’s the end of the world! I feel annihilated,” might then think, “Why is this happening? I’m not normal! I’m going crazy!” But our analysis can give reason to this irrational turbulence. “No, I’m not going crazy,” the person can say to himself, “but my inner brain is showing a force that I can hardly tolerate.” Thus, when we understand the “why” of an experience, we may better tolerate the “what” of the experience, even though the escape hatch is not yet in sight.

**Subcortical Vicious Circles Create the Cortical-Conscious Impasse**

Brain research shows that we have self-reinforcing brain circuits. Most circuits are positive and adaptive. But other self-reinforcing circuits go out of control and are non-adaptive. These are “vicious circles” that repeat themselves and therefore drive us up the wall. Conscious thoughts can show the cortical pattern of vicious circles. “I want to be loved, but that’s impossible.” “After that betrayal I’ll never trust anybody again. But maybe it’s all my fault. I was too possessive.” “I should get down to studying. The exam is in three days. But I have no will power.” During such impasses, the brain cortex is spiralling with repetitions, and each time we finish as the losers. Meanwhile what is happening in the subcortex? Brain research, like tomography, show that our conscious (cortical) thoughts and moods are riding on top of these unconscious (subcortical) patterns. (Liss, 2007a)

Let’s start with adaptive self-reinforcing subcortical patterns. Gerald Edelman shows, for example, that the basal ganglia, controlling action routines, stimulate the substantia nigra and the ventral tegmentum. These areas, located in the very bottom of the brain, then send up jets of dopamine, which is not a neural network but a chemical neuromodulator, and this reinforce still further the neural pattern of the basal ganglia. Thus the subcortical process begins as a neuronal circuit in the basal ganglia, stimulating a chemical, and this reinforces the neuronal pattern. As a whole, we have an adaptive and self-reinforcing “neuronal-chemical” circuit all contained within the subcortex. Our cortical-conscious experience can be to feel “good and strong” when our subcortical action system is invigorated by this spiralling process.

But such neuronal-chemical circuits can get out of hand. One example comes from the research of Berridge (2003). Here is how such a “vicious circuit” can work. The amygdala regulates our
emotions. This important region sends messages in all directions -- up, down and laterally -- and thereby activates many circuits. (LeDoux, 1996) One important neuronal circuit is from the amygdala to the **locus coeruleus**, a region which is lies still deeper in the subcortex. The locus coeruleus produces another important chemical neuromodulator, **noradrenaline**. This neuromodulator is then shot back up to the amygdala, reinforcing its activity of creating our emotional impulses. Thus, amygdala-generated emotions, like fear and rage, become yet stronger. But the story of this subcortical vicious circle does not finish here. According to these researchers the neuroadrenaline also reaches the **hippocampus** and **cingular gyrus**. This neuromodulator inhibits these two regions and the whole process goes wacky and out of control. Why? These two subcortical regions, the hippocampus and cingular gyrus, normally inhibit the amygdala to prevent our emotions from going wild. Therefore we have subcortical neuronal-neuromodulatory circuits that inhibit the inhibitors and prevent control or “contextualization” of our emotions. The conscious-cortical sequence registers all these changes and we have the impasse within the Stream of Conscious, which is the basis of psychological suffering.

![Diagram](image)

**Explanation:** The amygdala, regulator of emotions, goes out of control when the “contextualizing” inhibitors (cingular gyrus and hippocampus) are themselves inhibited by the high noradrenalin levels.

**Summary**

In summary, the Stream of Consciousness, although conceptualized by William James more than 100 years ago, has remained relatively undeveloped by the science of psychology. The difficulty in obtaining concrete examples of an almost invisible and ineffable phenomena that occurs only when a person is totally alone, silent, immobile and unobserved by another, has created almost insurmountable obstacles for this field of study. Nevertheless, when we examine several extracts (presented in a previous article), we observe the overwhelming intensity of the thought sequences
when a person finds himself entrapped by a repetition of self-doubts, self-criticism and other forms of negative retroflexion.

This powerful and tenacious phenomenon that can account for many aspects of human suffering needs to be explained. We have presented elements of modern research that describe the subcortical mechanisms of the brain. The brain’s cortical areas determine consciousness. But these are constantly influenced by neuro-chemical circuits within the subcortex, and it is these lower brain processes that regulate the patterns and intensity of the conscious sequences, especially when we are alone. It is as if cortical consciousness is riding upon the unconscious subcortical motor.

The powerful subcortex, which guarantees our adaptation to life-threatening situations, can go out of control and attack our equilibrium during periods of solitude, thus creating the impasse which overwhelms, at times, our Stream of Consciousness. Therefore, a tank in the garden.

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