

**The Stream of Consciousness in Daily Life I:
The Neurophysiological Basis of the Impasse**

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The Stream of Consciousness refers to the sequence of thoughts that we have when we are alone. These thoughts are automatic, repeat themselves, involve our deep sense of Self and are intimately connected with our emotions. They represent our “deeper Self.” Often these repetitive thought sequences finish in an impasse. “It’s too much!” “Impossible!” “I’m a failure!” “I’m ruined!” “Completely lost!” And with this inner language we might have a feeling of contraction, a knot, a falling sensation in the belly, a pressure in the chest, an inner cry of exasperation or other unpleasant sensations. But there is an irony in all this: **The unhappy event that provoked this repeated experience was very brief– in the case of a criticism, a refusal, an insult, an interference, it may have lasted several seconds – but the repetition in the memory may attack us a number of times every night.** We might admit to ourselves that we suffer from obsessions, but whether we admit it or not, this impasse of repeated negative thoughts circles around in our mind whenever

we find ourselves alone. And what happens when we're other people? Even then, in the recesses of our mind, the same scene may be repeating itself. We may be barely conscious of these repeated sequences, but they nevertheless create an impact.

What are the consequences of this inner repetition. **The neuronal circuits become reinforced.** But more happens than this. The hormones and neuromodulators that are activated at the very same moment will also return like waves hitting the beach. The total experience, which includes **neuronal** circuits and **chemical** secretions, becomes stored in the deep memory like a pattern engraved in stone.

A New Perspective for Psychotherapy

Our analysis of the Stream of Consciousness brings us to a radical departure regarding "what is the problem" that we are treating psychotherapy. What is the reason for continuous emotional unhappiness? And this might suggest new approaches for offering help.

For each kind of suffering there are certain specific events that triggered our unhappy emotions of hurt, sadness, fear, humiliation, anger, defeat, etc. But our awareness of what happens during the Stream of Thought adds another essential factor regarding the question, "How did this suffering arise?" The provocative event brought about an unpleasant inner sensation. We can call this a state of "disregulation." But it is **the repetition of this experience** within our private and intimate thoughts ("I'm a failure!") that acts like a hammer banging again and again on the same nail! **The pain deepens with every blow and the memory becomes more deeply engraved.**

Therefore, the psychotherapist thinks, "There are two events that have created this state of suffering. There was the initial provocative event, and then there was the repetition of this event in the inner Stream of Consciousness. Normally, the psychotherapist first focuses on the initial, provocative event: "What happened that created this very strong disappointment?" But our awareness of the Stream of Thought now brings us to consider another useful question: "When you are alone, what thoughts repeat themselves regarding this unhappy episode?"

Another interesting consequence regarding the Stream of Consciousness: "Are there ways that a person might confront his or her inner thoughts and change them to give relief and escape from this inner labyrinth?"

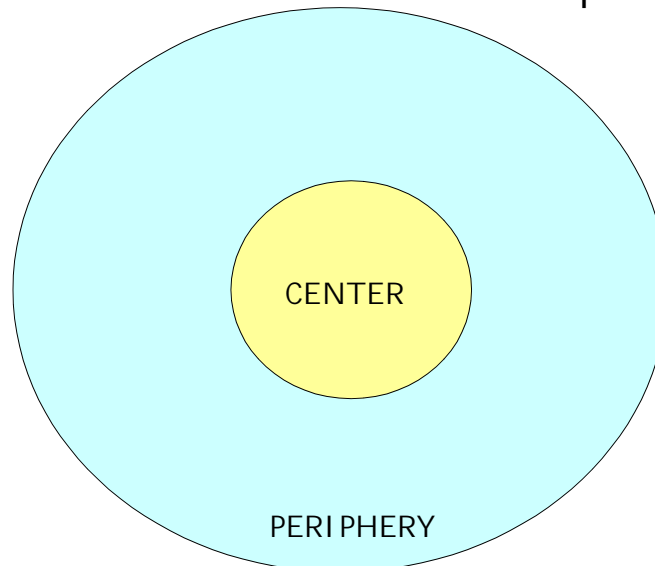
What Happens During Our "Stream of Consciousness"

Let's start from the beginning. How can we understand "consciousness"? This question has been treated in different ways. We have the phenomenology of philosophers such as Husserl, Heidegger and Sartre. There are also expositions by neurophysiologists such as Gerald Edelman and Edmund Rolls. Beyond that there are works by scholars such as Douglas Hofstadter. One point in common in these works; they do not treat concrete examples. In fact, to my mind they often represent a stream of words that are vague, inconclusive and circular without reference to any single moment of experience. This might be justified. We can say that philosophy has the goal of reflection without reference to concrete evidence. It is the work of **scientific investigation**, in contrast, that correlates ideas with concrete evidence. We can conclude, therefore, that our approach in this study, which will raise real case examples, is scientific in method.

Gestalt Psychology: Figure and Background

There is a model of consciousness that has emerged with scientific investigation and which we find highly useful for studying the Stream of Consciousness, namely, the model of Figure-and-Ground proposed by Gestalt Psychology. The Gestalt Psychologists, Wolfgang Köhler and P. Wertheimer, studied visual perception. They concluded that **the structure of conscious visual perception is based on a central Figure and a peripheral Ground.**

Consciousness: Center & Periphery



This basic model was then used in the original and creative work, **Gestalt Therapy**, written in the 1950's by Paul Goodman, Fritz Perls and Ralph Hefferline. These psychotherapists proposed that the model of Figure-and-Ground can be useful for understanding not only visual experience but, in fact, **all experience**. This means that the Figure, the central part of consciousness, comes from our focus of attention. At the very same time our experience has a background of "barely conscious elements" in the periphery; these elements may regard our body position, visceral sensations, facial expression, non-verbal movements, attitudes, "flash images," and "barely articulated thoughts." An interesting exercise developed by the Gestalt psychotherapists is as follows: "Focus on the 'here and now' and describe every thought and sensation that enters into consciousness." By means of this exercise the person discovers that certain perceptions and thoughts are outside of the center of consciousness, like our back against the chair, the position of an arm, the amplitude of our breath, and so on, and that by focusing attention on our inner state, these "barely conscious" elements enter in the center of consciousness. This suggestive model, unfortunately, was not developed after the original work, **Gestalt Therapy**, was published.

However, a new impetus for developing the distinction between Figure-and-Ground within conscious awareness came about with the publication of Daniel Stern's **The Present Moment** (2004, pp 112-121). Stern develops the concepts of "explicit" and "implicit." "Explicit" consciousness refers to the dimension of consciousness that is clear and lucid. "Implicit" consciousness, in contrast, is vague, subtle, difficult to define and intuitive.

The scientific problem: What observations can help us distinguish "the explicit" from "the implicit"? If a patient is sharing with us his experience, what is explicit and clear in his consciousness, and what is implicit, vague and almost undefinable, that is, "almost conscious"? One solution has been developed and can guide our scientific inquiry. **The use of words is the proof that something is explicit in our consciousness.** This means that if a thought is expressed in words, this thought must be sufficiently clear and lucid in order that it be made "explicit" by verbal expression.

Does this mean that if we do not have words for an aspect of experience, this aspect must be necessarily vague and implicit? Absolutely not. For example, our perception of the road in front of us when we are driving our car, the musical score we read when playing an instrument, the colours and the forms we create when painting a landscape, are all examples of **the possibility of explicit consciousness existing without words.** But our focus of attention, for this study, will not deal with these examples.

Let us return to the power of verbal language. Whenever we describe a thought or event with words, we can be sure that this thought or event occupies, more or less, the center of consciousness. This basic principle – **that what is expressed in words**

represents a central and explicit part of consciousness – will guide us when we deepen our investigation regarding the Stream of Consciousness, especially when we deal with three basic questions, namely, “How can we **register** the stream of consciousness?”, “How can we **understand** it?” and “How can we **change** it?”

But before dealing with these questions, we must ask ourselves, as scientists, “How can we **observe** the stream of consciousness?” If we are studying our own personal stream of consciousness, the answer is that we know our stream of consciousness by means of **introspection**. But what happens when our goal is to study the stream of consciousness of another person? This poses a grave scientific problem since the experience of another person, as R.D. Laing clarified in **The Politics of Experience**, () cannot be seen directly by another person. Therefore, how can it be scientifically studied? Even more difficult is the question of studying “the stream of consciousness in an Impasse,” since this occurs in solitude. The presence of the scientific observer or his measuring apparatus means that the person is no longer in solitude. That means that there will always be some degree of distortion between the stream of consciousness, as it really occurs in solitude, and the stream of consciousness that is somehow transmitted to another person who is studying it. This might remind us of Planck’s dilemma when studying the position and movement of electrons; in order to study the electron, the electron must respond to some energetic input sent by the observer, but this energetic input already changes the state of the electron. Therefore both the electron and the Stream of Consciousness of another person cannot be studied in their “pure” states, but always suffer from some distortion due to the input of the observer.

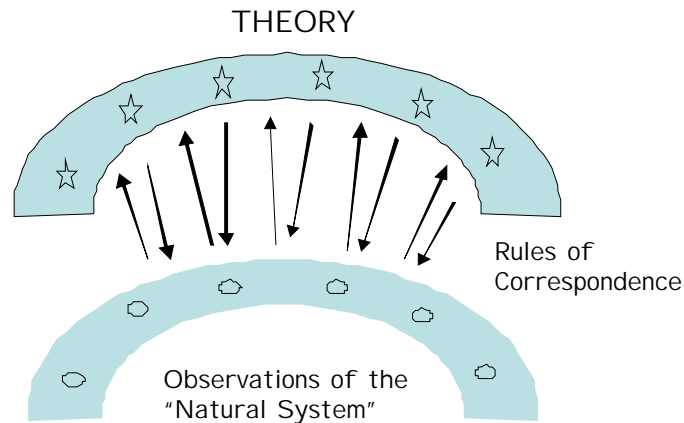
Scientific Inquiry According to Carl Hempel: The Study of “Natural Systems”

The epistemology of science, according to Prof. Carl Hempel (Hempel, 1952), allows us to further clarify our scientific project and the obstacles. (See also Liss, 1983) The psychotherapist wishing to know his patient’s “stream of consciousness” is confronted by the same dilemma as the scientist, that is, that the “natural system” being studied is not visible to direct observation.

Let us begin with some fundamental premises: We know from our own personal experience that “inner thoughts” exist. We know, in addition, that such thoughts can repeat themselves when we are alone. But how is it possible to make this natural system of “inner thoughts” **visible** and then **register** them, as is required by science? It is possible that one day science will develop a technology of observation and registration, for example, by registering the subliminal movements of the vocal cords in order to capture our inner language. And perhaps, one day, yet further distant in time, perhaps science will develop methods for capturing and recording the electrical waves that precisely correspond to our conscious thoughts and

images. Then the subject can be “hooked up” to the registration apparatus when alone, and this invisible process can become directly observable. But such methods are for the future. For the moment we do not have such means available for studying our stream of consciousness in solitude.

The Epistemology of Science according to Carl Hempel |



“Science is the a back and Forth movement between observations and theory”

The Case of Mary: “I Was Abandoned”

Despite this, we do have **indirect** means to study our inner thoughts in solitude. A person can remember certain fragments of this inner process, especially if he has had a period of training for introspection. Psychotherapy is one means of training. Let us take the example of Paola,. She says, “When I feel alone, the same thought keeps returning... He left me. I have the image of the moment I returned home and found the house empty.” Despite the inevitable distortions of memory, a part of Paola’s actual thoughts when alone are reproduced in this moment of intimate sharing. It is true that things happen during the Stream of Consciousness that are beyond the stream of words, but the words spoken in psychotherapy nevertheless transmit a central aspect of the original experience.

Thus certain patients show the capacity and trust required for sharing their inner world of thoughts, images and emotions that repeat themselves in solitude, and this becomes the jumping off point for therapeutic elaboration.

Other examples of the Stream of Consciousness come from people's diaries as well as from literary works. Authors such as Franz Kafka, James Joyce and Virginia Woolf are known for this particular style of writing. In the article, "The Stream of Consciousness in a Work of James Joyce," (Liss, 2006) a dramatic example of the Stream of Consciousness of an alcoholic who fails in his job is presented. The analysis shows that sympathetic and parasympathetic components of the sub-cortical autonomic nervous system are in constant interplay and condition the protagonist's inner turmoil.

Three Levels of the Stream of Consciousness, from the most general, in every waking moment, to the particular moments of arriving at a recurrent Impasse when in solitude.

The concept of the Stream of Consciousness refers to several different moments in daily life. The first and most general meaning: The Stream of Consciousness refers to the flow of thoughts, within consciousness, from the moment we wake up in the morning until falling asleep at night. All thoughts, perceptions, feelings, etc., occur within the flow of consciousness. The second meaning refers to the flow of consciousness during **solitude**. The third and most specific meaning, which is the object of this study, is the sequence of thoughts, usually occurring during prolonged solitude, which conclude in an **impasse**, a feeling of no escape. And this sequence repeats itself, leaving us in a state of anguish or depression.

Three Levels of the Stream of Consciousness

1. **First level:** All moments of consciousness, including our interactions with others and with the world in everyday life.
2. **Second level:** Moments and periods of being alone, including thoughts that are memories, reflections, strategies, images and fantasies.
3. **Third level:** Those particular moments in solitude in which the thoughts repetitively return to a situation or emotion which makes us feel unhappy, but from which there seems no escape. The **impasse!**

1. Interactions in Daily Life

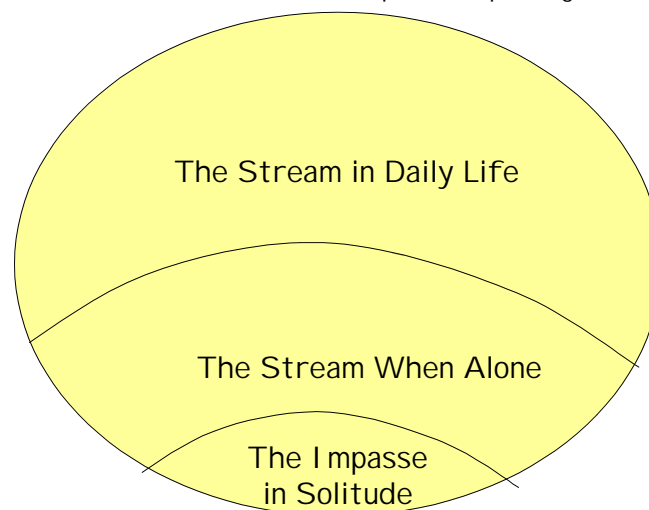
When we go to work, talk with colleagues, open the computer, do shopping, return home, cook, spend the evening in company, etc., we are in the Stream of Consciousness of everyday life. These all represent moments of interaction with the world. Within the sequence of consciousness, we will find a seamless integration of perception, thought, emotions, memory and action strategies. How can we visualize this complexity in an instant? The Gestalt model of consciousness – figure and background – helps us conceptualise this integration. Certain dimensions of experience are momentarily in the center of consciousness; other dimensions remain at the edge of consciousness, but may enter the center and receive our full attention, also momentarily.

2. Varying and Dispersive Thoughts When We Are Alone

When we are alone, our thoughts travel in various directions: bills to pay, the closing time of the supermarket, the cost of food, telephone calls to make, the need to clean up the kitchen, the feeling of an overcast day, a funny joke suddenly remembered, or something undefinable that has no words. Thus we are speaking of moments when we are not involved in an interaction with the world. But our investigation of the Impasse concerns a more specific moment of consciousness.

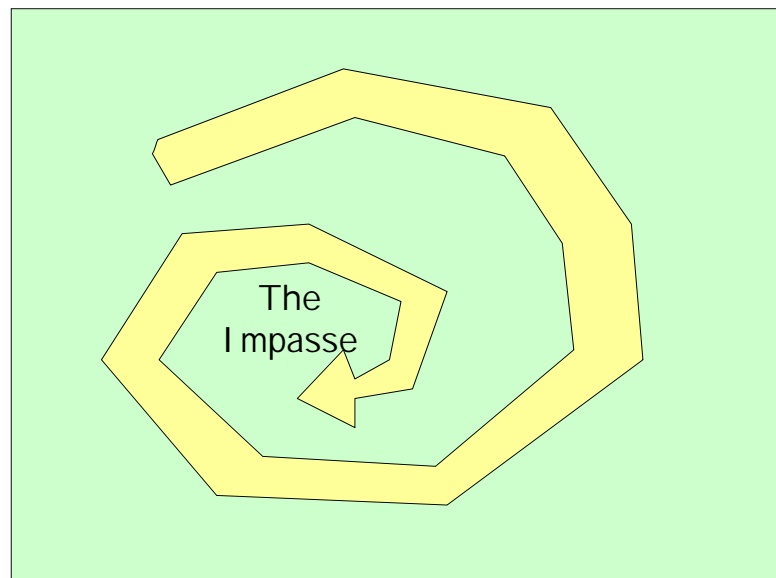
The 3 Meanings of the Stream of Consciousness:

From the General Stream to the Impasse in prolonged solitude



3. The Impasse: Intimate Thoughts that Finish in a Negative State of “No Way Out” When Alone

We have arrived! Our goal is just this, to study this most intimate dimension, namely, the thoughts that involve our existence, that feel important for our identity, that come with an emotional charge, and that repeat themselves with little change from moment to moment. Here are some frequent examples: “I must succeed. It’s my last chance!” “Like an idiot, I didn’t say anything!” “Let’s see who’s the best!” “I’m fed up with this stress!” “I can’t stand him!” “I’m not good enough!” In this study regarding the Impasse, we will focus on those moments in the Stream of Consciousness when we finish in a blocked thought. We call this moment the Impasse, or the knot. It feels like we are entrapped in a cage and we cannot escape!



The Repetition of the Impasse During the Stream of Consciousness

A disturbing event can repeat itself in our consciousness, much like a stone thrown into a pool. The waves repeat themselves. Nevertheless, the memory of the Impasse does not repeat itself like five or six diminishing waves. Certain recurrent thoughts go on and on, like a broken disc that keeps repeating a small bit of the melody: “What a disappointment!” “I can’t do it!” “It’s too much!” “A betrayal!” The neurophysiological cause of this unhappy repetition will be presented later. The problem is that we feel overwhelmed and victimized by this inner mechanism which is out of our control; the intrusive thought keeps popping into mind without losing its intensity and without a conclusion. Our minds go round and round in circles, with each repetition putting us deeper into the hole and leaving us desperate and depressed. Not a happy state of affairs.

Recent neurophysiological research can help us better understand why this emotional knot is so durable and sometimes insuperable. Prof. Eric Kandel, in his recent book, **The Memory of the Present**, presents his important research regarding memory. The neurons of the hippocampus and amygdala – two subcortical brain regions – become larger and thicker because of these repetitions. Also the interconnection with other neurons within the same circuit become more numerous. In conclusion, the neuronal circuits become stronger and more stable, leaving the person in a state of chronic anxiety and depression.

How is it possible to modify the Stream of Consciousness of a person chronically anxious, uptight and depressed? This is a true challenge for psychotherapy.

What Happens During the Impasse?

The **Impasse** represents a sequence of thoughts that repeats itself, that makes us feel helpless and unhappy, and for which we can find no solution or escape route. Certain life situations can throw us into the Impasse: failure, loss of love, offended personal esteem, block of an essential action, grave sickness, accusation and feeling of guilt, threat of economic disaster, etc. Our mind turns over the event repeatedly like a hammer banging a nail into a coffin.

To imagine this sequence and understand its complex dynamic, we will offer a design of consciousness. This picture is greatly oversimplified. Nevertheless it shows how different dimensions of consciousness can move from the “implicit” periphery of experience to the “explicit” center.

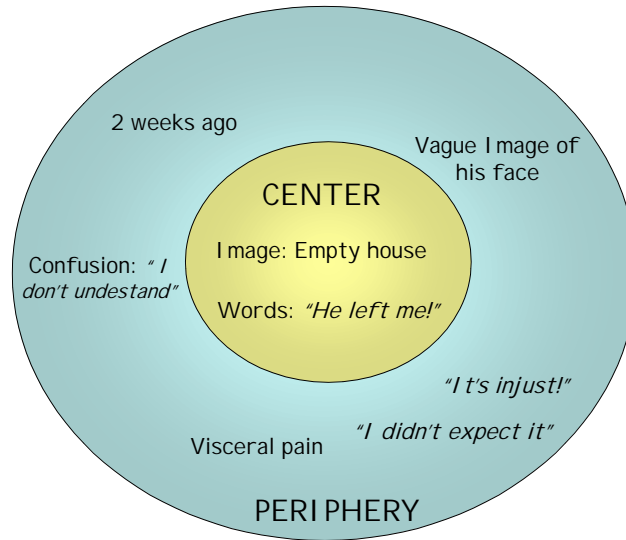
When Mary Was Abandoned

Mary was left two weeks ago by her boyfriend. In her inner thoughts, she constantly repeated the phrase, “He left me!” And what was happening in the sequence of consciousness? In the lucid center of consciousness, an anguishing image was repeating itself, the empty apartment. This represented the moment when Mary returned home from work and found the apartment abandoned. Her companion had left her.

At the same time that the traumatic image of the empty apartment occupied the central stage of her consciousness, there were several other components of the unhappy experience that were at first only in the “periphery” of consciousness. **One by one, these diverse components of the overall trauma entered the central stage of her experience and momentarily took the limelight:** a visceral feeling of “heaviness” and “pain,” a fluctuating **image** of her companion’s face, the **word**

“Surprised!” followed by the word, “Unjust!”, a feeling of **confusion** accompanied by the phrase, “I don’t know...”, and the sense of **time**, “Two weeks ago.”

The Consciousness of Disappointment and Hurt: “ He left me! ”



This design offers a spatial model of the first moment in the Impasse.

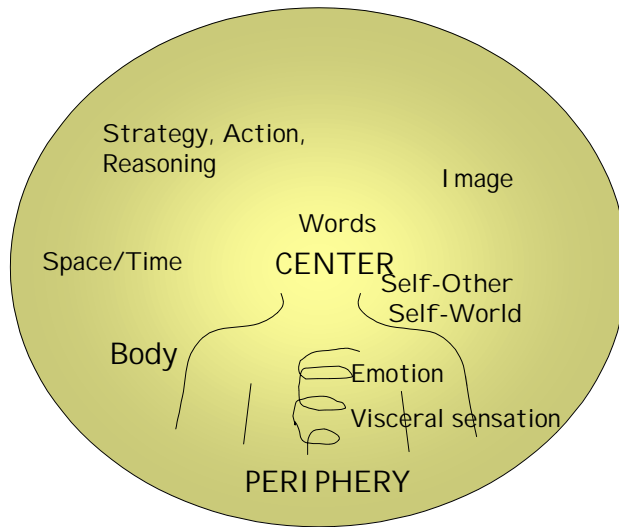
The therapeutic dilemma: How can Mary be helped to overcome this obsession that continuously upsets her?

A General Map of Consciousness

The professional helper, Psychotherapist or Counselor, can be called upon to face various situations in which there is an Impasse. In order to assist our understanding regarding this diversity, we will offer a **general map of Consciousness**. The goal is to have a model which can guide us when trying to understand the panorama of different experiential sequences.

Here are several questions which we would like our general map to answer: What components of experience are frequently in the center of consciousness and, therefore, “explicit”? In contrast, which components are frequently in the periphery, hardly conscious and, therefore, “implicit”? Based on numerous encounters with different patients, I have tried to offer a general scheme of the figure-and-ground of consciousness.

A General Map of Consciousness



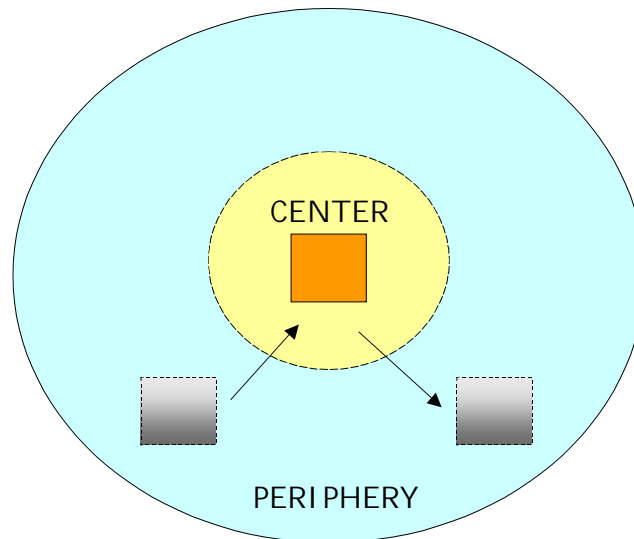
Here is how to read this map of consciousness: In the center consciousness we find words, and our words refer to our thoughts. Sometimes in the center of consciousness there is also a visual image. (Many people say that they rarely have visual images.) In the periphery of consciousness we will find other dimensions of which we are “hardly conscious”, but which can enter the center with explicit clarity: Self-Other (our relationship toward the other person), Self-World (our potential actions in the world), our mental reasoning such as our asking ourselves the question, “Why?” and our thinking of causal explanations, our action strategy for doing something or else our sense of impotence in not knowing what to do, the emotions that we feel, our visceral sensations and, finally, our awareness of space and time. (Other psychotherapists may create alternative maps based on their different experiences.)

And how does our Stream of Consciousness flow, that is, how does it move ahead? By means of a series of sequential states, with certain components often repeating themselves. Let’s return to the example of Mary, after her unexpected separation from her boyfriend. In the first moment the center of consciousness is totally filled by the painful **words**, “He left me!” In an instant the **image** of the empty apartment comes to mind, perhaps as a momentary flash, and then disappears. Following this comes the painful **visceral sensation**. This sensation may be pushed to the back of her mind because it is intolerable. Then comes the word, “Unjust!”, followed by the phrase, “I don’t understand!” With this final phrase mental clarity is lost and the visceral feeling returns, more vague than before, but also more spread out. Then the thought, “What can I do?” comes momentarily to mind, but this also recedes to the background with the thought, “I don’t know. I don’t understand...”

This entire sequence is accompanied by the implicit thought referring to Self-and-Other, that is, “He did this to me while I gave him everything!” With this thought coming to the center, the visceral sensation becomes more intense, this time feeling like rage. But this sensation does not last, because the following thought is, “Maybe it was my fault!” The cloudiness returns and there is a feeling of confusion. **After several moments of mental cloudiness and vague thoughts, returns the initial idea, “He left me!”, and the sequence begins again, almost unaltered, and this can repeat itself throughout the night!**

An outsider might say, “This is how we make ourselves unhappy,” but this phrase is not empathic, since it implies that we are doing something that we can control in order to make ourselves unhappy. But the reality is just the opposite! This process is based on sub-cortical impulses that we cannot direct control; they just emerge. In fact, we can feel victimized by our own interior processes. The mind would like to escape from the trap: “Enough!” “Stop it!” “Go away!” “I’ll find someone else!” “He’s just a bastard!” But the Impasse returns inexorably. We’re in the swamp up to our neck, and with every step we find ourselves digging deeper into the same hole.

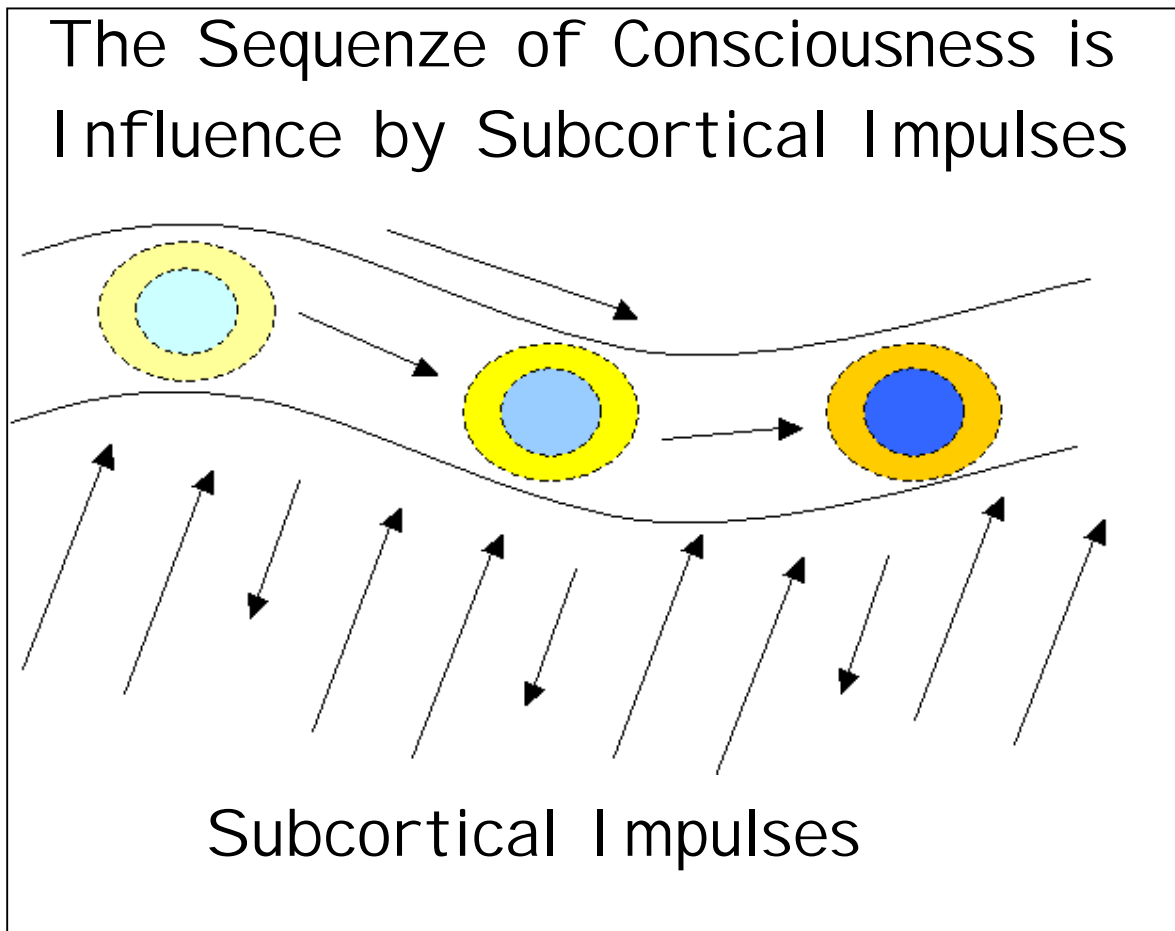
The Stream of Consciousness: From the Periphery to the Center and Back to the Periphery



Why is the Stream of Consciousness Largely Out of Our Control?

Can’t we control our thoughts? During our everyday activities – tasks to accomplish, discussions with colleagues and friends, analyzing our external problems, etc. – a large part of our thoughts are sufficiently canalized so that they doesn’t make us feel overwhelmingly unhappy. Furthermore, given that these thought

can even refer to calculations, such as $4 + 4$ make 8, we are surprised and taken aback when our thinking at other moments go off the tracks and out of control. But a person who suffers from hurt and anxiety due to the loss of love, a lack of confidence in oneself, the knowledge of being betrayed, a threat of job loss, or prolonged isolation, can testify that the thoughts that constantly arise go against one's will and wishes. The first level of explanation is that **the thoughts are dominated by the emotions.**



The impact of the subcortical impulses on the Stream of Consciousness can be compared to the surging up of a powerful wave, as represented by “The Great Wave of Kanagawa” by Hokusai.



“The Great Wave of Kanagawa” by Hokusai

A Neurophysiological Explanation of the Impasse During the Stream of Consciousness

A map of the neurophysiology of the emotions can offer a second level of explanation that is more precise and complex.

Cortical Level

Orbito-frontal lobe

Regulation

Consciousness of visceral and emotional sensations

Subcortical Level

Cingulate gyrus (several researchers consider this area as a part of the cortex.)

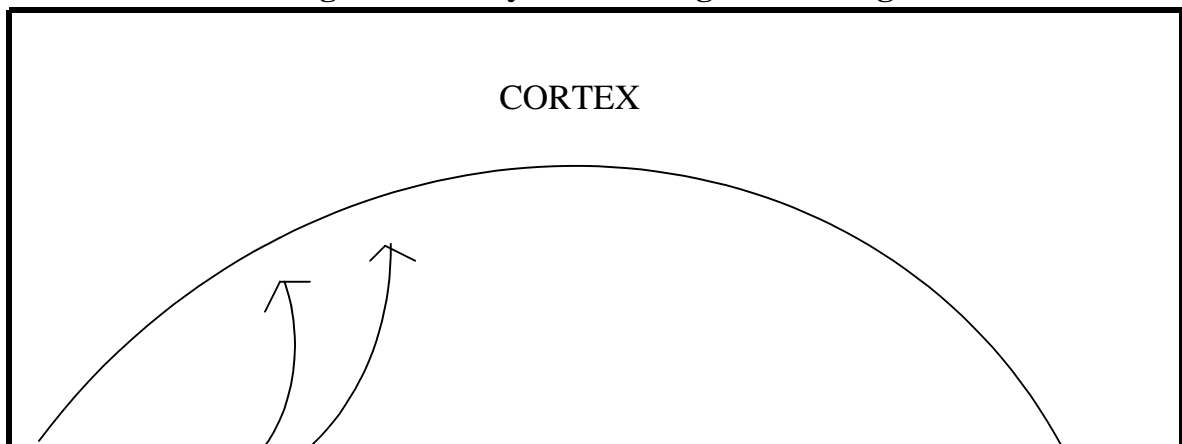
Regulation

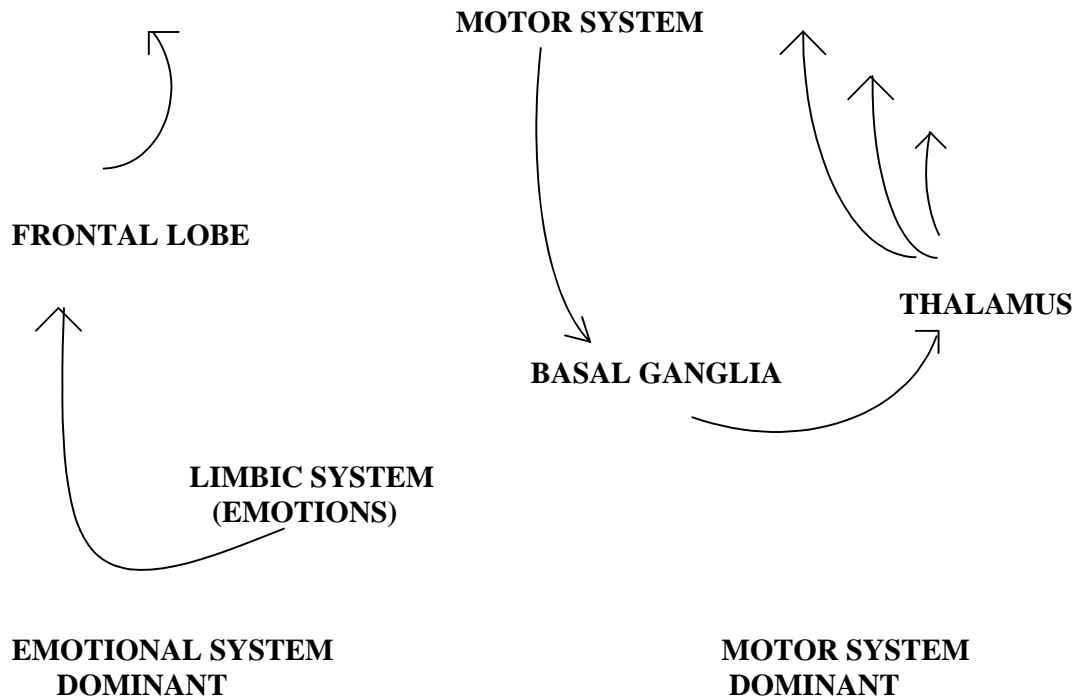
Self-Other dynamic

Insula	Body experience, disgust
Hippocampus	Spacial perception, explicit memory
Amygdala	Rage, Fight-or-flight
Hypothalamus	Autonomous Nervous Systems (sympathetic – parasympathetic regulation of the vascular system, hormones)
Central Gray Substance	Pain (physical and emotional)
Centers of Neuromodulator Production	Total brain activation
Visceral Nuclei	Visceral reactions

In the article, “Recent Research on the Neurophysiology of Emotions,” it is explained how our sub-cortical system that regulates action routines and new action the basal ganglia – shifts our attention toward the **external** world in order that we can organize our strategies for an active response to the situation at hand. But when night comes, and our activities change so that we no longer have a program for action, conscious attention shifts to the **inner** world (from cortex to sub-cortical areas). What we think becomes highly influenced by our psycho-physical state regulated by the limbic system: amygdala, hippocampus, hypothalamus, etc. In that moment our thoughts become dependent on our emotions, much like a carriage (our conscious self) that becomes pulled by six horses (our sub-cortical impulses). We can call this sequence of conscious states that is regulated by our program of action, “The Logic of Daytime.” In contrast, the sequence of conscious states that takes place when the action program is missing, organized by the sub-cortical emotional limbic system, we can call, “The Logic of Nighttime.” It is as if we have two inner worlds, or continents, and it is the **night world** that emphasizes the moments of frustration and disappointment taking place during our **daytime world**, and this makes us imprisoned by our suffering.

The Logic of the Day and the Logic of the Night





Conscious and Unconscious

Our earlier design, “A General Map of Conscious Sequences,” can be explained by means of the Table that presents the **sub-cortical regions** that send messages **upwards** in order to influence our conscious sequences at every moment. Systems Theory explains that **every System (and sub-System) has both an internal logic as well as an interactive dynamic with other Systems.** This means that the cortex and the sub-cortex, two major Systems, each have their inner, semi-autonomous tendencies. During daytime consciousness, the logic of the brain cortex, which is rational, precise, oriented toward formulating means and obtaining goals, dominates. During daytime logic our thoughts tend to be clear, organized, in contact with perceptual reality, etc. On the other hand, during nighttime consciousness there is a growth of the Limbic System influence, and sometimes this will dominate our consciousness, especially when we are entrapped by the repeated negative thoughts of the Impasse. In such instances of nighttime consciousness the thoughts become confused, overlap each other, escape from problem-solving logic, allow visceral impulses to emerge and, all the while, reveal our deeper feelings toward ourselves and toward others.

In the above map the arrows which are larger and more numerous go from the base and travel upwards. This is based on our interpretation that there is a greater impact from bottom to top than the opposite direction. This corresponds to Joseph LeDoux’ research (1996) which shows that there are more neuronal impulses traveling from the amygdala to the cortex than from the cortex to the amygdala. But other sub-cortical regions have the same dominance over the cerebral cortex. For example, the

sub-cortical hippocampus exerts more influence over the cortex than the opposite. (Edelman, 1989; Kandel, 2006) In summary, the sub-cortical unconscious exerts a greater effect upon cortical consciousness than the other way around.

In conclusion, **at every moment there is an interaction between consciousness and the unconscious, and this corresponds to cortical – subcortical interaction.** At the moment we are studying a mathematical problem, the major influence is from the top down. But when a person twists and turns in his bed at night, obsessed by an anguished feeling touched off by his separation or failure, we can say that this tenacious brain dynamic is primarily from bottom to top. And this happens when the Stream of Consciousness descends into the black hole of the Impasse and cannot escape or find relief.

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