

THE COMP^{UTATIONAL} WARENESS THEORY

CONSCIOUSNESS EXPLAINED -- IN DETAIL AS AWARENESS INHERENT IN DYNAMIC, COMPLEX, UNIFIED BRAIN COMPUTATION

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THINK FAR BEYOND THE “HARD PROBLEM”

THE “HARD PROBLEM OF CONSCIOUSNESS” CLAIMS SCIENCE PROVIDES NO BASIS FOR EXPLAINING CONSCIOUS AWARENESS. THIS IS FALSE.

CONSCIOUSNESS IS NOTHING BUT A VERY SPECIAL AWARENESS OF INFORMATION -- AND SCIENCE DEMANDS ALL REALITY TO HAVE AWARENESS OF INFORMATION.

THIS IS THE AWARENESS OF VARIABLE VALUES THE EQUATIONS OF PHYSICS MUST HAVE TO COMPUTE IN RESPONSE TO THOSE VALUES, AS THE LAWS OF PHYSICS REQUIRE. WE CALL THIS AWARENESS INHERENT IN ALL COMPUTATION “COMPWARENESS.”

SCIENCE SUGGESTS BRAIN COMPUTATION HAS A VERY SPECIAL COMPWARENESS – ONE AWARE OF THE SAME INFORMATION, AT THE SAME TIME, AS CONSCIOUS AWARENESS.

THIS SIMILARITY BETWEEN AWARENESS OF CONSCIOUSNESS AND BRAIN IS SO COMPLEX, OCCAM’S RAZOR SUGGESTS THEY ARE THE SAME THING.

THE COMPWARENESS THEORY ASSUMES THESE TWO AWARENESSES ARE, IN FACT, EXACTLY THE SAME – THAT CONSCIOUSNESS IS NOTHING BUT COMPLEX, UNIFIED BRAIN COMPWARENESS.

THE THEORY’S BURDEN IS TO EXPLAIN HOW BRAIN COMPWARENESS CAN HAVE ALL THE RICH QUALITIES, INCLUDING THE SENSES OF UNITY, WE EXPERIENCE IN CONSCIOUS AWARENESS.

AS SHOWN TO THE RIGHT [IN THIS LAYOUT, BELOW], THE LIST OF CONSCIOUS QUALITIES PARTIALLY EXPLAINED IS ALREADY LONG.

WITH THE RAPID ADVANCES EXPECTED IN ARTIFICIAL INTELLIGENCE AND COGNITIVE BRAIN SCIENCE, MOST OF THE QUALITIES OF CONSCIOUSNESS MAY BE SUBSTANTIALLY EXPLAINED WITHIN 5 TO 30 YEARS.

SO, THINK FAR BEYOND THE STUMBLING BLOCK OF THE “HARD PROBLEM.” THINK TOWARD THE DETAILED MAPPING BETWEEN BRAIN AND CONSCIOUS AWARENESS INVISED BY THIS THEORY.

WITH SUCH A DEEP UNDERSTANDING, CIVILIZATION CAN BETTER KNOW HOW NEUROSCIENCE, ARTIFICIAL INTELLIGENCE, AND MAN-MACHINE INTERFACES CAN GREATLY IMPROVE “WHAT IT IS LIKE TO BE” A CONSCIOUS HUMAN BEING.

AGAIN, WHAT IS “COMPWARENESS”?

“COMPWARENESS” IS SHORT FOR “COMPUTATIONAL AWARENESS.”

SCIENCE DESCRIBES THE COMPUTATION OF REALITY IN TERMS OF EQUATIONS. FOR THOSE EQUATIONS TO COMPUTE AS A FUNCTION OF THEIR VARIABLES, AS THE LAWS OF PHYSICS DEMAND, THEY REQUIRE AN AWARENESS OF THOSE VALUES.

THIS AWARENESS REQUIRED FOR COMPUTATION IS CALLED “COMPUTATIONAL AWARENESS.” IT’S ONE OF THE MOST FUNDAMENTAL ASPECTS OF REALITY.

THIS AWARENESS IS NOT JUST OF A FEW VARIABLES IN AN ELEMENTARY PHYSICS EQUATION. IT’S AN AWARENESS OF THE MASSIVELY PARALLEL VALUES THAT DEFINE ALL REALITY – OF A SEA OF VALUES ASTRONOMICALLY LARGE, PLANK’S LENGTH FINE, VARYING UP TO MILLIONS OF TRILLIONS OF TIMES A SECOND.

THE COMPUTATIONAL AWARENESS OF THE UNIVERSE IS ARGUABLY A GREAT SPIRIT.

BUT QUALITIES OF COMPWARENESS VARY WITH QUALITIES OF THE COMPUTATION OF WHICH THEY ARE PART – OF WHAT’S AWARE OF WHAT, WHEN AND HOW IN SUCH COMPUTATION.

SO, ONLY BRAIN-LIKE COMPUTATIONS HAVE COMPWARENESS WITH THE BRAIN-LIKE QUALITIES OF AWARENESS WE CALL “CONSCIOUSNESS”.

BRAIN COMPWARENESS IS MASSIVELY PARALLEL, MASSIVELY DIFFERENTIATED, MASSIVELY UNIFIED, MASSIVELY GROUNDED, HIGHLY DYNAMIC, AND VARIABLY FOCUSED – AS IS CONSCIOUS AWARENESS, ITSELF.

THIS RICH AWARENESS IS NOT AN EPIPHENOMENON. IT’S AN ABSOLUTELY ESSENTIAL PART OF THE COMPUTATION OF INTEGRATED PERCEPTION, FEELING, AND UNDERSTANDING THAT HAS ALLOWED HUMANS TO DOMINATE EARTH.

THIS THEORY IS INTUITIVE, RIGOROUS, EXPLANATORY, AND IMPORTANT

--INTUITIVE -- IT DEFINES CONSCIOUS AWARENESS OF INFORMATION IN TERMS OF SOMETHING EXTREMELY SIMILAR, I.E., BRAIN COMPUTATIONAL AWARENESS OF EXACTLY THE SAME INFORMATION.

--RIGOROUS -- IT PROVIDES A SPECIFIC SCIENTIFIC DEFINITION OF WHAT CONSCIOUSNESS IS BELIEVED TO BE – I.E., BRAIN COMPWARENESS HAVING THE QUALITIES OF INFORMATIONAL AWARENESS WE EXPERIENCE AS CONSCIOUSNESS.

--EXPLANATORY -- IT CLAIMS THAT, TO THE EXTENT WE UNDERSTAND THE CAUSAL INFORMATION FLOW OF A COMPUTATION, WE UNDERSTAND THE QUALITIES OF ITS COMPWARENESS. THIS ALLOWS US TO MAP IN DETAIL BETWEEN QUALITIES OF BRAIN COMPUTATION AND THOSE OF CONSCIOUS AWARENESS.

--IMPORTANT -- IT CAN GREATLY IMPROVE OUR UNDERSTANDING OF THE QUALITIES OF HUMAN, INTER-HUMAN, ANIMAL, CELLULAR, QUANTUM, COSMIC, AND ARTIFICIALLY-INTELLIGENT INFORMATION AWARENESSES – AND HOW TO BEST USE OR IMPROVE THOSE QUALITIES.

“THINK DIFFERENT”

THINK FREE OF MISCONCEPTIONS THAT HAVE HOBbled THEORY OF MIND – INCLUDING MANY “HARD PROBLEM,” “ZOMBIE,” “WHAT IT IS LIKE TO BE,” SUBJECTIVE- OBJECTIVE, ANTI-MATERIALIST, AND ANTI-REDUCTIONIST ARGUMENTS.

BE REALISTIC. NO THEORY CAN FULLY EXPLAIN “WHAT IT IS LIKE TO BE” ANY REALITY. BUT OPEN YOUR MIND TO HOW MUCH THIS THEORY CAN EXPLAIN.

THE CORTEX HAS AWARENESS OF 100 TRILLION MILLISECOND-TIMED SYNAPSES – OF MORE INFORMATION THAN IN 50 MILLION HDTV CHANNELS.

TRY TO IMAGINE THE RICH QUALITIES AN AWARENESS OF SO MUCH INFORMATION CAN HAVE -- WHEN DYNAMICALLY UNIFIED, GROUNDED, AND SELECTIVELY FOCUSED – AS SCIENCE INDICATES BRAIN AWARENESS CAN BE.

INTROSPECT. THINK OF QUALITIES OF CONSCIOUSNESS TO BE EXPLAINED. READ BRAIN SCIENCE. IMAGINE -- IMAGINE IN DETAIL -- HOW BRAIN SCIENCE AND COMPWARENESS CAN EXPLAIN THEM ALL.

HELP EXPAND THIS THEORY

MAKE YOUR MARK ON THIS YOUNG THEORY. HELP IT GROW INTO AN AMAZINGLY RIGOROUS, EXPLANATORY, AND INTUITIVE “SCIENCE OF CONSCIOUSNESS”.

CONSCIOUS QUALITIES EXPLAINED*****

-AWARENESS = CONSCIOUS AWARENESS IS THE COMPWARENESS INHERENT IN MANY, BUT NOT ALL, BRAIN COMPUTATIONS.

-ABOUTNESS = SCIENCE SUGGESTS THE BRAIN HAS COMPWARENESS OF EVERYTHING ABOUT WHICH YOU ARE CONSCIOUS. DIFFERENT BRAIN AREAS ARE COMPWARE OF DIFFERENT SENSES, CONCEPT TYPES, EMOTIONS, AND BEHAVIORS. BRAIN SCANS SHOWING WHICH PARTS OF YOUR BRAIN ARE ACTIVE CAN INCREASINGLY “READ” WHAT YOU’RE CONSCIOUS OF.

-RICHNESS = THE CORTEX HAS COMPWARENESS OF MORE INFORMATION THAN 50 MILLION HDTV CHANNELS. IT’S REASONABLE TO BELIEVE THIS IS ENOUGH “RESOLUTION” OF AWARENESS TO PORTRAY ALL THE RICH QUALITIES OF AWARENESS WE SENSE IN CONSCIOUSNESS.

-SIMULTANEITY = PARALLEL COMPUTATION OCCURING IN DIFFERENT PARTS OF THE BRAIN HAS COMPWARENESS OF MULTIPLE THINGS AND PROPERTIES AT THE SAME TIME.

-UNITY – THE SPATIALLY DISTRIBUTED COMPWARENESSES OF THE BRAIN’S TRILLIONS OF SYNAPSES HAVE TO BE UNIFIED TO GIVE RISE TO THE RICH, COHERENT, SIMULTANEOUS SENSE OF AWARENESS WE HAVE IN CONSCIOUSNESS. BRAIN COMPWARENESS HAS MANY UNITIES:

--NEURON PATTERN UNITY = NEURONS ARE AWARE OF UNITIES OF SPECIFIC SYNAPSE FIRING PATTERNS.

--HNN PATTERN UNITY = HIERARCHICAL NEURAL NETS (“HNNs”) ARE AWARE OF UNITIES OF PATTERN COMPLEXES SPANNING SUBSTANTIAL PORTIONS OF SENSORY, EMOTIONAL, SEMANTIC, AND TEMPORAL PATTERN SPACE. THIS CREATES AWARENESS OF UNITIES WITHIN AND ACROSS THOSE SPACES. THIS INCLUDES AWARENESS OF UNITIES OF ASSOCIATIONAL,

GENERALIZATIONAL, AND COMPOSTIONAL ("ASSO-GEN-COMP") RELATIONSHIPS THAT PROVIDE BINDING BETWEEN PATTERNS UP, DOWN, AND ACROSS THE CORTEX'S HIERARCHICAL DEEP-LEARNING NETS.

--UNITIES OF SYNCHRONOUS TIMING = SYNCHRONOUS FIRING OF INDIVIDUAL NEURON PATTERNS IN A COMPLEX OF PATTERNS ALLOWS OTHER NEURONS TO BE AWARE THAT SUCH NEURON PATTERNS ARE PART OF THE SAME UNIFIED PATTERN COMPLEX.

--UNITIES OF SYNCHRONOUS TUNING = MILLIONS TO BILLIONS OF NEURONS CAN HAVE THEIR AWARENESS UNIFIED BY BEING SYNCHRONOUSLY TUNED INTO THE SAME SYNCHRONOUSLY-FIRING PATTERN COMPLEX.

--UNITIES OF MULTIPLEXED SYNCHRONOUS TUNING = SUCH SYNCHRONOUS TUNING CAN BE MULTIPLEXED, SO MILLIONS TO BILLIONS OF NEURONS CAN BE TUNED INTO THE SAME RAPIDLY REPEATED SEQUENTIAL ACTIVATION OF UP TO ROUGHLY SEVEN DIFFERENT PATTERN COMPLEXES. THIS ALLOWS MILLIONS TO BILLIONS OF NEURONS TO SHARE A UNIFIED AWARENESS OF THOSE DIFFERENT PATTERN COMPLEXES, THEIR PARTS, AND THE RELATIONSHIPS BETWEEN THEM.

--UNITIES OF MEMORY = MEMORY CREATES UNITIES OF AWARENESS ACROSS TIME.

--UNITIES OF SELF = THE BRAIN'S RELATIVELY STABLE POPULATION OF COMPLEX EXPERIENTIAL MEMORY PATTERNS PROVIDE THE UNITIES OF "SELF".

--UNITIES OF MUTUAL INFORMATION = MORE ABSTRACTLY, THE MUTUAL INFORMATION CREATED BY THE BRAIN'S TRILLIONS OF IRREGULAR CAUSAL SYNAPTIC CONNECTIONS IS A MASSIVE, COMPLEX UNITY OF COVARIANCE -- AS SUGGESTED IN GIULIO TONONI'S INTEGRATED INFORMATION THEORY.

-MEANING = THESE MECHANISMS FOR UNIFYING AWARENESS ALLOW THE BRAIN TO HAVE COMPLEX SIMULTANEOUS AWARENESS OF A PATTERN'S PARTS, SUB-PARTS, ASSOCIATIONS, RELATIONS, AND IMPLICATIONS. THIS SIMULTANEOUS AWARENESS, TO VARYING DEGREES, OF MANY OF A PATTERN'S EXPERIENTIAL ASSOCIATIONS IS ITS SENSE OF "MEANING".

---MEANING MAY BE FLESHED OUT FROM MEMORIES ASSOCIATED WITH SUPERORDINATE, SUBORDINATE, OR OTHERWISE SIMILAR PATTERNS IN THE CORTEX'S ASSO-GEN-COMP PATTERN HIERARCHY, AS WELL FROM PERCEPTUAL AND CONTEXTUAL INFORMATION.

---THE MEANING OF A GROUP OF PATTERNS OFTEN INCLUDES AWARENESS OF REMEMBERED IMPLICATIONS OF -- OR SINGLE OR MULTI-HOP RELATIONSHIPS BETWEEN --THE MEMBERS OF THAT GROUP, OR SIMILAR GROUPS.

---THE MEANING OF SENSATIONS INCLUDES MORE THAN THE OBJECTS AND ACTIONS MAPPED ONTO THEM. IT INCLUDES COMPLEX, EXPERIENTIALLY-LEARNED RELATIONSHIPS BETWEEN VARIOUS TYPES AND QUALITIES OF SENSORY INFORMATION. FOR EXAMPLE, THE RELATIONSHIPS BETWEEN 2D SHAPES, SHADINGS, AND TRANSFORMATION -- IN CONJUNCTION WITH LEARNING FROM TACTILE EXPERIENCE OF 3D SPACE -- GIVE RISE TO LEARNED VISUAL AWARENESS OF 3D SPATIAL MEANING.

-TEMPORAL AWARENESS = THE BRAIN'S HNNs HAVE INNATE ABILITY TO LEARN AWARENESS OF TEMPORAL PATTERNS. FURTHERMORE, COMPARISON OF CURRENT STATES WITH PAST REMEMBERED STATES ALLOWS AWARENESS OF CHANGE ACROSS TIME, AND THUS OF THE MEANING OF TIME.

-SPATIAL AWARENESS = THE BRAIN'S HNNs LEARN SPATIAL PATTERNS IN -- AND TRANSFORMATIONS OF SUCH PATTERNS ACROSS -- RELATIVELY LOW DIMENSIONAL SENSORY INPUT SPACES, SUCH AS VISUAL, AUDIO, AND SOMATOSENSORY SPACE -- ASSOCIATING MEANING WITH SUCH SPACES.

-MEMORY = THE BRAIN'S DEEP-LEARNING HNNs AUTOMATICALLY LEARN AND STORE MASSIVE SETS OF EXPERIENTIAL MEMORY PATTERNS, INCLUDING ASSO-GEN-COMP WEBS OF PATTERN RELATIONSHIPS. CONTEXT SPECIFIC ACTIVATIONS OF PATTERN COMPLEXES WITHIN THIS WEB PROVIDE AWARENESS OF REMEMBERED MEANING.

-SELF – YOUR CONSCIOUSNESS IS “YOURS” BECAUSE YOUR BRAIN’S AUDIENCE OF MEMORIES RECORDS THE UNIQUE EXPERIENCES OF YOUR LIFE. THIS RELATIVELY STABLE POPULATION OF ACTIVATABLE PATTERNS IS THE “AUDIENCE” OF SELF IN BERNARD BAARS’ METAPHORICAL “THEATER OF CONSCIOUSNESS.” AN EXCITED HUMAN AUDIENCE CAN SEEM TO HAVE A COLLECTIVE AWARENESS OF ITS OWN. BECAUSE OF MUCH GREATER INTERCONNECTION, THE BRAIN’S AUDIENCE OF MEMORIES CAN HAVE A MUCH MORE UNIFIED COLLECTIVE AWARENESS. **WE’RE MOST CONSCIOUSLY AWARE OF WHAT THIS AUDIENCE OF SELF HAS THE MOST COLLECTIVE COMPWARENESS OF.**

-PERCEPTION = IS COMPWARENESS OF LOW LEVEL SENSORY INFORMATION AND OF HIGHER LEVEL ASSO-GEN-COMP PATTERN COMPLEXES OF SHAPES, MOTIONS, OBJECTS, ACTIONS, CONTEXTS, AND IMPLICATION THAT ARE MAPPED ONTO -- AND WHICH GIVE MEANING TO -- THAT SENSORY INPUT.

-EMOTION = IS COMPWARENESS OF BODY, VISCERAL, HORMONAL, NEUROCHEMICAL, ATTRACTIVE/AVERSIVE, AND PLEASURE/PAIN STATES, AND OF THE EFFECTS BETWEEN SUCH STATES AND BRAIN COMPUTATION.

-DRIVES = ARE INSTINCTUAL, OFTEN UNCONSCIOUS, BIASES TOWARD PHYSICAL OR MENTAL GOALS, BEHAVIORS, AND THOUGHT PATTERNS THAT EFFECT BRAIN COMPUTATION AND COMPWARENESS.

-MOODS AND STATES = ARE MODULATIONS OF BRAIN COMPUTATION AND COMPWARENESS BY EMOTIONS, NEUROMODULATORS, AND OTHER CHANGES IN BIOPHYSICAL BRAIN STATES.

-NON-CONSCIOUS DEEP SLEEP = DURING DREAM SLEEP WE ARE CONSCIOUS, BUT DURING SLOW WAVE SLEEP OUR BRAIN IS IN SUCH A HOMOGENOUS, BRAIN-WIDE SYNCHRONY THAT THERE’S LITTLE OF THE UNIFIED COMPLEXITY OF AWARENESS THAT CHARACTERIZES CONSCIOUSNESS.

-ASSO-GEN-COMP RELATIONS = **THE BRAIN’S MASSIVELY PARALLEL HNNs ARE OPTIMIZED TO LEARN -- AND COMPUTE AWARENESS OF – PATTERNS OF ASSOCIATION, GENERALIZATION, AND COMPOSITION.** **“ASSOCIATION”** LINKS PATTERNS THAT CO-OCCUR, OR HAVE OTHER TEMPORAL RELATIONS, THAT ARE MORE ACROSS THAN VERTICAL IN DEEP-LEARNING PATTERN HIERARCHIES. THESE LATERAL LINKS LETS US BE AWARE OF MANY MORE PATTERN RELATIONSHIPS, INCLUDING CO-ACTIVATION PROBABILITIES – BOTH POSITIVE AND NEGATIVE. **“GENERALIZATION”** LINKS AN INSTANCE OF A PATTERN CLASS WITH ITS CLASS -- LETTING US BE AWARE OF THE MEANING OF AN INSTANCE FROM ITS CLASS, AND OF A CLASS FROM ITS INSTANCES. **“COMPOSITION”** LINKS A PATTERN WITH ITS PARTS -- LETTING US BE AWARE OF BOTH AT ONCE. **THE BRAIN’S CAPACITY TO COMPUTE SUCH ASSO-GEN-COMP RELATIONS WITH SUCH MASSIVE PARALLELISM EXPLAINS MANY IMPORTANT QUALITIES OF HUMAN CONSCIOUS AWARENESS, INCLUDING:**

---COMPLEX NON-LITERAL MATCH = NON-LITERAL MATCH IS THE ABILITY TO RECOGNIZE INSTANCES AND TYPES OF OBJECTS AND ACTIONS EVEN THOUGH MOST OF THEM ARE SELDOM EVER SEEN, HEARD, OTHERWISE SENSED, OR IMAGINED IN THE SAME WAY. ASSO-GEN-COMP COMPUTING ALLOWS THE BRAIN TO MODEL THE SIMILARITIES, DIFFERENCES, AND COLLECTIVE PROBABILITY OF SUCH INSTANCES AND TYPES AT MULTIPLE DIFFERENT LEVELS IN ITS REPRESENTATIONAL HIERARCHY. THIS GREATLY FACILITATES THE FLEXIBILITY AND CAPABILITY OF NON-LITERAL MATCH. THE MASSIVE PARALLELISM OF SUCH COMPUTATIONS ALLOWS HUMANS TO HAVE AWARENESS OF MANY COMPLEX NON-LITERAL MATCHES IN A FRACTION OF A SECOND.

---MEANING = OUR AWARENESS OF MEANING IS LARGELY COMPWARENESS OF ASSO-GEN-COMP PATTERN RELATIONSHIPS.

---DYNAMIC GENERALIZATION = THE BRAIN’S MASSIVELY PARALLEL ASSO-GEN-COMP NEURAL

NETS CAN, IN AN INSTANT, DYNAMICALLY ACTIVATE NETWORKS OF PATTERN RELATIONS THAT REFLECT THE MAJOR CONTEXT-RELEVANT GENERALIZATIONS IN A PATTERN POPULATION OF INTEREST. THIS FOCUSES AWARENESS ON THE MORE IMPORTANT CONTEXT-RELEVANT RELATIONSHIPS IN A POPULATION OF MEMORIES THAT DEFINE A CONCEPT'S MEANING.

--CONTEXTUAL COHERENCE = COMPLEXES OF POSITIVE AND NEGATIVE PROBABILISTIC AND EMOTIONAL ASSOCIATIONS IN THE BRAIN'S NEURAL NETS SETTLE MAJOR PATTERN ACTIVATIONS INTO CONTEXTUALLY COHERENT STATES, AS INDICATED BY NECKER CUBE PERCEPTION.

--COHERENT, SPECIFIC INSTANTIATION = PARALLEL ASSO-GEN-COMP COMPUTING MAKES IT EASIER FOR THE ACTIVATION OF ONE OR MORE HIGHER LEVEL PATTERNS TO BE TRANSLATED DOWN THE ASSO-GEN-COMP HIERARCHY INTO A MORE DETAILED, COHERENT REPRESENTATION OF SUCH HIGH LEVEL PATTERNS. EXAMPLES INCLUDE OUR ABILITY TO RAPIDLY GENERATE COHERENT, GRAMMATICAL SPEECH AND COHERENT VISUAL MENTAL IMAGES.

--IMAGINATION = IS COMPWARENESS OF COMPLEX EXPERIENTIAL PATTERN ACTIVATIONS THAT ARE NOT DIRECTLY MAPPED ONTO CURRENT SENSORY INFORMATION. THIS OFTEN INVOLVES THE "COHERENT, SPECIFIC INSTANTIATION" JUST DESCRIBED.

-UNCONSCIOUS THINKING AND DECISION – WE HAVE NO EXPLICIT CONSCIOUS AWARENESS OF THE VAST MAJORITY OF BRAIN COMPWARENESS. WE TEND TO ONLY BE EXPLICITLY AWARE OF THOSE SENSATIONS AND THOUGHTS THAT SUB-CONSCIOUS BRAIN COMPUTATION HAS SELECTED TO ACTIVATE, SYNCHRONIZE, AND TUNE SUBSTANTIAL PORTIONS OF THE BRAIN INTO. WE ARE NOT CONSCIOUS OF MOST OF THE COMPUTATION THAT MAKES, AND EFFECTS, SUCH SELECTION.

-FOCUS = WHAT WE HAVE THE MOST COLLECTIVE COMPWARENESS OF, AND THUS CONSCIOUSNESS OF, IS MODULATED BY FOCUS, WHICH INCLUDES:

--VARIABLE POINT OF VIEW = THE BRAIN CAN RAPIDLY CHANGE WHAT PATTERN COMPLEXES THE AUDIENCE OF SELF IS TUNED TO, USING BOTTOM UP AND/OR TOP DOWN MECHANISMS.

--VARIABLE EXPLICITNESS = A PATTERN COMPLEX TO WHICH THE AUDIENCE OF SELF IS TUNED CAN VARY IN THE DEGREE TO WHICH ITS ACTIVATION IS CLEARLY DEFINED DOWN ONE OR MORE BRANCHES OF THE ASSO-GEN-COMP PATTERN HIERARCHY.

--VARIABLE NUMBER AND RELATIVE INTENSITY OF FOCI = DIFFERENT PATTERN COMPLEXES WITH DIFFERENT MAGNITUDES OF ACTIVATION AND SYNCHRONOUS PHASE OFTEN COMPETE FOR COLLECTIVE COMPWARENESS. THUS, TO SOME DEGREE, YOU CAN HAVE VARIOUS SIMULTANEOUS DEGREES OF CONSCIOUS AWARENESS OF DIFFERENT COMPLEXES AT ONCE. ALSO, WITHIN THE "MULTIPLEXED SYNCHRONOUS TUNING" DESCRIBED ABOVE, THE DIFFERENT MULTIPLEXED SYNCHRONIES MAY HAVE DIFFERENT DEGREES OF ACTIVATION AND COLLECTIVE AWARENESS.

--VARIABLE DEGREES OF AWARENESS WITHIN A FOCUS = WHEN A GIVEN PATTERN IS SYNCHRONOUSLY ACTIVATED, THERE TENDS TO BE A SYNCHRONIZED SPREADING ACTIVATION OUT FROM IT. AS LONG AS THE FOCUS STAYS ON THAT GIVEN PATTERN, THERE TENDS TO BE MORE COLLECTIVE AWARENESS OF THAT GIVEN PATTERN AND PATTERNS IT STRONGLY ACTIVATES THAN ON OTHER PARTS OF THE SPREADING ACTIVATION. BUT THE FOCUS CAN RAPIDLY SHIFT TO OTHER PARTS OF THE SPREADING ACTIVATION OR TO OTHER FOCI.

-STREAM OF CONSCIOUSNESS = OUR BRAIN HAS MULTIPLE PROPERTIES, SUCH AS SPREADING ACTIVATION, HABITUATION, AND BASIL GANGLIA SWITCHING THAT TEND TO CREATE A CONSTANTLY VARYING SUCCESSION OF DIFFERENT SYNCHRONOUS FOCI. THIS PRODUCES A STREAM OF CONSCIOUSNESS.

-QUANTUM AWARENESS = ALTHOUGH EVERYTHING IS ARGUABLY QUANTUM MECHANICS, IT'S NOT CLEAR QUANTUM DESCRIPTION IS NECESSARY FOR UNDERSTANDING CONSCIOUSNESS. HOWEVER, QUANTUM MECHANICS MIGHT CONCEIVABLY PLAY A CENTRAL ROLE IN

