



UNLOCKING
CONSCIOUSNESS



BRIAN MIND FORUM

Appendix 013

Towards a Language of Cognition

Section One

New Lexicon

Section Two

Words associated with:-

Thinking

Imagination

Consciousness / conscious mind

Concepts of Beauty

Language:-

of Language

Reading, Writing & Printing

Maths

Notation

Physical Prowess

Arts

Creative professions

Endeavour

Law

Systems of notation

Functions of Words

Writing

Reading

Examples of Word systems

Language of Proteins

Language of the genetic code

One of the key building blocks of understanding any area of human experience or science is to develop a series of definitions and words to categorise, classify and describe the attributes being investigated and discussed. Similarly it remains true that the basis of scientific understanding is the ability to measure the attributes of the subject being investigated.

Many people think that the mind, the emotions, let alone consciousness and creativity are simply too difficult, abstract and amorphous to enable us to define and measure them and potentially their component parts. This has tended to be true at the beginning of every quest for knowledge. However, every journey, however difficult, starts with the first steps.

Let us open our minds to the possibility that the brain is sufficiently flexible that it can begin to think about how we might start developing a lexicon of possible terms and how they might be measured. Even the quest to find such terms may help illuminate the scale and dimensions of the problem.

*Language and thinking are completely intertwined and dependent on each other
Language creates reality*

Wittgenstein

If you have not got a word for it, you can not know it

Wittgenstein

Abilitands	Units of competences: Abilities
Actands	Units, cells, structures or organs that can generate or have access to energy and carry out functions.
Attractands	Units of Attraction: Beauty
Autopoiesis	Self creation. Greek; <i>auto</i> self and <i>poiesis</i> creation. A definition of a living system. A self organising system. See ' <i>Selfortem</i> '.
Awarands	Degrees / units of Awareness: Research by Giulio Tononi: <i>The Ravenous Brain</i> . Daniel Bor. Basic books 2012. p 213
Bayes' Theorem	A statistical algorithm to identify solutions to problems. A series of Iterations that assigns probabilities on the basis of what has already been observed, until an optimum is achieved. See Appendix 55
Biological Software	The systems, structures and means of communication that enables a group of independent individual live entities to cooperate together to behave as one coordinated meta-organism. [enabling the skills and accomplishments of

the group to significantly exceed the sum of the component individuals] [behave in an intelligent fashion].

See machine and neuronal software.

Brainware	The physical components of the Brain. See Mindware.
Calibration	
Catallaxy	The ever expanding possibilities generated by a growing division of labour. Spontaneous order as a result of exchanges of information.
Cognitive Disinhibition	Failure. information that is irrelevant
Cognitive Enclosures	John Duncan 'Intelligence' p 134 see Neural Enclosures. "Sequences of simple processes account for the successful solution of complex problems. P133 Alan Newell, Cliff Shaw & Herbert Simon. ' <i>General Problem Solver</i> '. P118. [cross reference Neurules & Memes]
Cycognition	The Sciences of Studying the Human Brain
Diagrat	Diagram Flow Chart Occam Feynman
Eidos	The essence of each thing and its primary substance. Often translated as 'the form of things'. See Gestalt. The abstract order and sequence of the elements of a system. The added value where the attributes of a system are greater than the sum of its constituent parts: Emergence: the <i>form</i> that enables passive components to deliver active functions: Coordinator of one cohesive, cooperative whole: Determines behaviour: Harmonic relationships.
Emergence, or Emergent properties	The means or attributes that enable the capabilities of a (complex) system to greatly exceed the sum of its components.
Emotands	Measurements of Qualia. Sensual Units
Epigenesis	Changes in gene expression due to mechanisms other than changes in DNA sequences
Event Horizon	New Thinking (Singularity)
Fluxome	Metabolic reactions whose rates can vary under different conditions
Forecognition	Lowenstein 'Physics in Mind'

FourPs	Prediction, Projection, <i>extra</i> Polation and Planning
Genome	The full set of genes
Geneware	Those codons and genes that form that part of the genome that codes the physical structures of an organism including RNA, amino acids, PNA, and proteins
Gestalt	When parts identified individually have different characteristics to the whole (Gestalt means "organised whole"). See Eidos
Hardware	The physical components of a system
Hierarchies	Structure of the brain made up of ever more complex neurules [cross ref Layers]
Imagination	The process of thinking. Planning, Prediction The controlled creation of neural structures that represent and describe non-existent events
Imaginet	Units of imagination: Stories Smallest measurable units of imagination
Information processing as a Turing machine	If it is possible to devise an algorithm to solve a problem, then any information processing machine can produce the answer.
Infotons	Smallest measurable unit of information
Intelligands	Smallest measurable units of intelligence
Intelligence <i>alt</i>	The capabilities of the neural structures we inherit. The ability to process neural algorithms accurately and quickly
Isomorphic	Being of identical or similar form, shape or structure.
Layers of neurons	Structure of the brain made up of ever more complex hierarchies of neurules [cross ref Hierarchies]
Machine (artificial) Software	Software is the ordering of the physical components of a system in different sequences and timings so that identical equipment is capable of carrying out a variety of different tasks. [...in such as a way to give the impression of behaving in an intelligent way]

Magneto Encephalography MEG	Mapping brain activity by recording magnetic fields produced by electrical currents occurring naturally in the brain using an array of SQUIDS (Superconducting Quantum Interference Devices)
Meaningware	The sequence, pattern and combination of words, the rhythm, rhyme, metre, onomatopoeia and alliteration and the relationships to other words, sensory and emotional that converts words into meaning. See wordware.
Memes	Cultural units (ideas or values or patterns of behaviour) that are passed from person to person by non genetic means. [cross ref Cognitive enclosures & <i>Neurules</i>]
Memory	in the brain is the conversion of Kinetic Energy to Potential Energy by the creation of neural circuits <ul style="list-style-type: none"> – the growth of physical networks. [cross reference to – <i>Sentition</i>].
Memory Formation	Patterns of Neural instructions + cross references.
Metabolome	Small Molecules. Sugars, fatty acids, amino acids, involved or generated by cellular processes
MetaNetworks	Hierarchies of (neural) networks linking groups of lower order structures together to form higher order functions in ever more complex structures.
Mindware	The metanetworks that determine the sequence, pattern, combinations and permutations of neural structures, or brainware, that converts information into memory, thinking and consciousness.
Morphware	That part of the genome that determines the order, timing, sequence and combination of how the amino acid, peptides and protein building blocks come together and fold into specialist cells.
Neural Enclosures	John Duncan ‘Intelligence’ see Cognitive Enclosures.
Neural Networks	See <i>Neurules</i> .
Neurological Kinaesthetics	The dynamic formation of new neural links and structures, and the generation, movement and direction of neural energy and messaging. The neural processes associated with learning.
Neurological Software	Electrochemical activity and electromagnetic fields generating patterns of activity that can establish neural structures, can activate neural structures and can be stimulated by neural structures.

Neuronics	That branch of science and technology that describes the architecture of, and transmission of information around Neural Networks. Neuronics can better be understood in terms of our knowledge of Energy and Thermodynamics.
Neuronal Groups	Large with many intrinsic neurons and synapses, Small with fewer extrinsic neurons & synapses. Thomas Young 1773-1829 q Max Bennett 'consciousness' p46-47 [cross ref Neurules]
Neuroanalyst	Studies the systems of the brain
Neurotechnologist	Someone studying the uses and functions of cognitive Neuroscience.
Neurotechnology	The study of the uses and functions of cognitive neuroscience
Neurontology	Basic Physical Properties of Neuron structures
Neurands	A Neurand is the smallest measureable unit of memory, made up of one or more neurons capable of generating sensations and impressions, stimulate actions; and be recognised, for an extended period.
Neurens	A Neuren is a unit of memory augmented by numbers of connections and cross references to other neurons, and links to glands, muscles and other organs.
Neurins	A Neurin is a unit of memory inherited at birth.
Neurons	Nucleus, Axons, Dendrites linked together by synapses and powered by mitochondria
Neurules	Neural Modules : A group or network of neurons linked together in various sequences and patterns capable of performing a function. Similar in concept to a 'subroutine' in a computer program. [cross ref. Memes & Cognitive enclosures, Neuronal groups, subroutines] See appendix 1
Neuron Trellis	Lowenstein 'Physics in Mind'
Neuroneer (ist)	A specialist in the understanding of neurons
Noveltands	Units of Innovation: "Creativity"

Operand	Used in mathematics. A value operated on by other values. Also used to describe an activity operated upon by other activities.
Operons	A set of Genes that are all regulated by the same switches (Microcosm Zimmer p35)
Optogenetics	The insertion of genes that code for light sensitive proteins into individual neurons, then, by shining brief pulses of different coloured light, light these nerve cells on or off.
Paradigm Shift.	Kuhn, Thomas S. <i>The Structure of Scientific Revolutions</i> .
Perception	What is happening out there. Nicolas Humphreys Mind p 82 [cross ref. Sensation]
Phonons	The Smallest measurable unit of heat in the crystalline structure of matter
Photons	The smallest measurable unit of light (or energy)
Planands	Information or instructions that determine when, how and in what sequence and pattern, combinations and permutations of actands are activated.
Planning	Prediction, Projection, extraPolation and Planning (Four Ps) See Forecognition
Programming	The organisation of components each capable of carrying out a function into structures, patterns, sequences and routines capable of carrying out tasks greater than the sum of their components Organising complete systems of subroutines into hierarchies of structures each capable of a more sophisticated task. See Science of software.
Proteome	The Proteins
Qualia	Problem of matching (mapping) language to neural impressions, sensations and feelings.
Redundancy	
Relatands	Units of Reciprocity: Relationships
Retrieval of neural information	The conversion of Potential Energy into Kinetic Energy: generating an action potential in neurons
Science of Software	The study of the processes (or programs) that organise hardware functioning units into hierarchical patterns of activity that produce effects far in excess of the ability of the individual underlying hardware units. (see programming).

Sensation	What is happening to me. Nicolas Humphreys, Mind p 82 [cross ref. Perception]
Sentics	The touch of emotions. Manfred Clynes: Nicolas Humphrey. 'History of Mind' p 40.
Sentition	Issuing an outgoing signal (originally to motor neurons). Consciousness Max Bennett. P86. [cross reference to Memory Formation]
Selfortem(s)	Self Organising Systems. See 'Autopoiesis'.
Singularity	New Thinking (Event Horizon)
Social Anhedonia	Preference for solitary activities
Software	The instructions that activate hardware. See also machine software, neurological software and biological software
Spract-ion (n) – ate (v)	Stimulus Process Action. The definition of information processing. Alan Turing, Computable Numbers, 1936.
SQUIDS	Superconducting Quantum Interference Devices. See Magneto Encephalography
Telos and derivatives.	End Directed. Terrence Deacon.
Thinking	The ability to interrupt an automatic response, identify and evaluate alternative responses, select and then implement the most efficient. The ability to merge all or parts of existing neural structures into novel new patterns that provide an innovative solution to a perceived problem.
<i>Alt.</i>	The ability to devise algorithms to resolve problems
<i>Alt.</i>	The ability to compose combinations of abstract ideas
Transcriptome	The RNA made from the genes
Words	Index to a mass of neural activity
Wordware	The components of words: letters, phonemes, syllables, and their sounds and shapes. See meaningware.

Notes

Particles / Information /Waves / Energy / Size/Mass: the value of $\dot{\alpha}$

Units of Measurement

Photons	Smallest measureable units of light (energy)
Intelligands	Smallest measurable units of intelligence
Imaginets	Smallest measureable units of imagination: Units of imagination: Stories
Infotons,	Smallest measurable unit of difference = Information
Neurands	Smallest measureable unit of memory,

Section Two

It is possible to learn a great deal about a subject by listing the associated words as this stimulates neural activity which can assist in the formulation of novel concepts. English is particularly valuable as it is famous for having so a rich population of Synonyms.

Words associated with Thinking.

Accurate
Acumen
Allegory
Alternative
Ambiguity
Analogy
Analyse
Antecedent
Application
Appraisal
Argue
Assumption
Authenticate
Axiom

Balance

Calculate
Categorise
Check
Cognition
Collate
Comparison
Compute
Conceivable
Concentration
Concept
Conclusion
Confront
Connotation

Consider
Consistent
Consult
Contemplate
Contrast
Compare
Coordinate
Credible

Data
Debate
Deduction
Define
Deliberate
Demonstrable
Derivation
Determine
Discriminate
Discussion
Dissection

Enquiry
Estimate
Etymology
Evaluate
Evidence
Examine
Experience
Experiment
Explore

Fable
Facts
Feasible
Figurative
Foolproof
Forensic
Forethought
Formulate

Gauge
Genuine
Guess

Harmony
Hypothesis

Illuminate
Imagination
Implication

Incubation
Idea
Induction
Inference
Information
Intention
Interpolate
Introspection
Intuition
Insight
Inspiration
Iterate

Juxtapose

Lateral (thinking)
Likely
Logical
Lucid

Match
Maxim
Meaning
Measure
Mediate
Memory
Metaphor
Model
Modify
Musing

Notion

Observe
Opinion
Organise

Parable
Parallel
Peer Review
Perception
Pensive
Pilot
Plausible
Point of View
Ponder
Possible
Postulate
Practice
Precise
Premise

Presumption
Probation
Probe
Proof
Prospect
Purport
Put in context

Quantify
Question

Rate
Ratify
Reason
Rebuttal
Reconnaissance
Reconstruct
Rehearse
Reference
Reflection
Relevance
Retrospection
Review

Sample
Scan
Scope
Sense
Sequence
Significance
Simile
Solution
Source
Speculate
Story
Structure
Study
Submission
Suppose
Surmise
Survey
Suspicion
Symbolic
Symptom
System

Taxonomy
Test
Theme
Theory

Thesis
Topical
Train of Thought
Trial
Typical

Validate
Value
Verify
Viable

Words Associated with Imagination

Definitions and attributes of **Imagination**; Sources OED, Wikipedia, Roget's Thesaurus.

1. An activity of thinking
2. Mental activity possible only when conscious.
3. Consciously aware of a sequence of events that are abstract and do not exist in reality.
4. Generally, but not always, an extrapolation of possible future eventualities
5. Possible solutions to intractable problems
6. The preparation of possible responses to potential events.
7. The formation of a mental image or concept of something that is not perceived as real and is not present to the senses; "imagination reveals what the world could be".
8. The ability to form mental images of things or events; "he could still hear her in his imagination".
9. The ability to be creative and resourceful: the ability to deal with unusual problems; the ability to cope with the unexpected.
10. Imagination, also called the faculty of imagining, is the ability of forming mental images, sensations and concepts, in a moment when they are not perceived through sight, hearing or other senses. ...

Imaginable: adj: that can be imagined.

Imaginary: adj: existing only in the imagination. Abstract ideas, images or concepts, only present in the neural structures of the brain.

Imaginative: adj: having or showing a high degree of the faculty of imagination.

Imagine: verb: a) to form a series of mental images, concepts or sequence of events (a story) in the brain, to store them, retrieve them and modify them.
b) picture to oneself something non-existent or not present to the senses.
c) think or conceive.
d) guess
e) be of the opinion
f) foretell
g) forecast

Imagining: noun: The process creating abstract ideas, images or concepts. Thinking

Imaginings: n: fantasies: the products, results of imagining

Imaginets: n : unites of imagination

Imagination: The ability to amass known facts and extrapolate them, or various aspects of some of them to synthesise a new, novel or innovative perspective, concept, idea or invention.

Imagination: The positive conscious creation of abstract ideas, scenes, plots or continuous stories of possible events and responses entirely within the neural structures of the brain and do not exist in reality.

Imagination: the neural creation of fictional ideas, hypotheses, theories, conjectures, scenes, plots or continuous stories.

IMAGINATION

Advocate

Aim

Apprehend

Anticipate

Arrange

Assume

Calculate

Compile

Compose

Comprehend

Conceive

Conceptualise

Concoct

Conjure up

Conjecture

Consider

Construe

Contrive

Deduce

Design

Devise

Dream up

Engineer

Envisage

Envision

Estimate

Expect

Fabricate

Fiction

Formulate

Foresee

Forecast

Foretell
Grasp
Guess
Hypothesize
Infer
Initiate
Instigate
Intend
Invent
Make up
Originate
Plan
Prophecy
Propose
Predict
Presume
Realise
Reason
Recommend
Speculate
Suppose
Surmise
Theorise
Wonder

Inspiration

Idea
Insight
Muse
Proposal
Suggestion
Thought

Think

Assume
Conceive
Consider
Envisage
Experimentalise
Imagine
Reflect
Research
Suppose

Abstract

Conceptual
Intangible
Nonrepresentational

Theoretical

Words Associated with Consciousness / Conscious Mind / Brain

Absent Minded

Accurate

Alert

Apathetic

Application

Asleep

Assiduous

Awake

Aware

Awake

Careless

Casual

Concentration

Curious

Day Dreaming

Diligent

Distracted

Diverted

Exact

Forgetful

Heed

Inadvertent

Inconsiderate

Inconsistent

Indifferent

Intent

Interrupt

Intuition

Meticulous

Neat

Negligent

Oblivious

Observant

Orderly

Preoccupied
Prepared

Recognition
Review
Reverie

Thoughtful
Thorough
Tidy

Vigilant

Alert)	
Aware)	
Awake)	Conscious Mind
Asleep)	
Anaesthetised)	

Sapient Brain / Mind

Creative
Conscious
Continuous: hold image: stable image.
Emotional
Failing
Inherited
Inventive
Learning
Motivated
Perceptive
Remembering
Reactive
Responsible
Sociable
Thinking

Words associated with Concepts of Beauty

Mathew Collings

1. Nature Repackaged: less is more. [Bridge in S France]
2. Simplicity: Light, People, Elegance of communication Geometric Arrangement
3. Unity: Everything fits together. Rhythm.
4. Transformation: World into Brain
Symbolic. Simple marks, complex whole. Performing
5. Surroundings. Space makes contents special (Munich modern art)
6. Animation. Energy of Sistine Chapel. Storm. Turbulence of Humanity

7. Surprise. New visions signs re-seeing [Magritte's dream]. 'This is not a pipe'.
8. Patterns, organization, looks nice, resonates, natural appearance.
9. Selection. Texture and colour. Compartmentalised.
10. Spontaneity. Individual reactions. Return to paradise. [beautiful face]
11. Stimulates a positive emotional reaction. Appeals to the senses. Feel-good factor. Feeling of pleasure. Attraction. Excitement.
12. Symmetry, balance, regularity.
13. Recognition. Turner 'Sky' Familiarity.

Languages of :-

Language

1. Expression of Experience
2. Description
3. Instruction
4. Organisation
5. Planning
6. Interrogation
7. Comparison
8. Reminiscence
9. Speculation
10. Representation
11. Accumulation and Transmission of Knowledge
12. Abstract Ideas & Concepts
13. Imagination, fantasy, extrapolation.
14. [dreaming, hallucination, nightmare, expression of]
15. Metaphor, simile, analogy, allegory, symbol, rhetoric, idiom, imagery, fable, parable, myth.
16. Expression of emotion
17. Persuasion
18. Oratory
19. Literature
20. Poetry
21. Verse
22. Onomatopoeia
23. Alliteration
24. Rhythm
25. Euphemism
26. Paradox
27. Epigram
28. Equivocation

Writing, Reading and Printing

1. Visual representation of Language
2. Transmission of Speech
3. Storage of Speech
4. Notation of Language
5. Recording speech

6. Storage of information
7. Mass reproduction of Information and News.

Notation:

Hieroglyphics, Cuneiform, Pictographs, Alphabet: consonants, vowels 500BC

Mathematics

1. Notation, Definition, Measurement & Manipulation of values
2. Arithmetic, science of numbers
3. Geometry, descriptor, notation & measurement of space & shapes.
4. Algebra, descriptor, notation & measurement of relationships.
5. Geography, descriptor, notation & measurement of the environment.
6. Chemistry, descriptor, notation & measurement of elementary substances.
7. Physics, descriptor, notation & measurement of matter, energy & space.
8. Geology, descriptor, notation & measurement of rocks.
9. All the other branches of science
10. Orientation
11. Direction
12. Time
13. Models

Notation: Letters, Roman, Arabic Current notation 1-0 made up of the appropriate number of L shapes, invented in Ripoll in Spain in C. 1300AD See appendix 054

Physical Prowess

1. Strength
2. Agility
3. Co-ordination
4. Dexterity
5. Relationships
6. Hunting Skills
7. Parenting Skills
8. Martial Arts
9. Leadership
10. Husbandry
11. Crafts

Performing, visual & cultural Arts (cultural prowess)

1. Drama, invention & performance
2. Music, composing & performing
3. Painting
4. Sculpture
5. Architecture
6. Built environment
7. Visual Arts
8. Clothes, weaving & tapestry'

Creativity

1. Medicine
2. Architecture
3. Exploration
4. Research
5. Invention
6. Innovation
7. Design
8. Entrepreneurship
9. Programming
10. Media

Human Endeavour

1. Law
2. Farming
3. Husbandry
4. Teaching & Education
5. Leadership
6. Government
7. Medicine
8. Management
9. Marketing
10. Selling
11. Journalism
12. Authorship
13. Money
14. Economics
15. Manufacture
16. Distribution
17. Travel & communications
18. Technology
19. Defence

Law

- 1 Law: Code of behaviour of community
- 2 Laws of Physics & Nature: Current description of observations of Patterns of Invariance and recognition of Statistical Regularities
- 3 Science about Understanding physical & biological World
- 4 Religion: classical way of Understanding human behaviour
- 5 Psychology: scientific way of Understanding human behaviour
- 6 Ethics & morality. How people behave towards each other

Systems of Notation

1. Writing
2. Numbers
3. Time

4. Music
5. Chemistry
6. Symbols: road signs etc.

Functions of Words

1. Words are indexes and descriptors of things and actions [nouns & verbs]
2. Moderators of other words [adjectives & adverbs]
3. Symbols of abstract, ideas, concepts & thoughts.
4. Connectors to other words
5. Words are the building blocks of Language
6. Words are carriers and agents of meaning.
7. Strings of words (phrases) multiply the meanings of individual words. The phrase can mean more than the sum of the constituent words. The basis of 'emergence'.
8. Words are descriptors and stimulators of emotion (anger, love)
9. Words can create impressions (onomatopoeia, rhyme, rhythm, alliteration)
10. Words are agents of interrogation
11. Words are agents of 4th dimension. Time past, present & future.
(both communicating & processing)
12. Words are agents of instructions
13. Words are agents of neural programming
14. Words are a means of organising the processing power of the Brain
15. Words are a means of constructing neural hierarchies of ascending complexity.
16. Numbers are subsets of Word structures
 - a. Numbers provide a language of measurement and computation (arithmetic)
 - b. Numbers provide a language of describe, define and measure shapes & spaces (geometry).
 - c. Numbers provide a language to describe, define and measure symbolic formulae (algebra)
 - d. Numbers are agents of relationships and the representation of information in diagrammatic and graphical form.
17. Notations are subsets of Words
 - a. Crotchets, Quavers,
 - b. H₂O,
18. Words are the agents of thinking
19. x

Writing

Converts ephemeral sounds (spoken words) and ideas (neural activity) [kinetic energy] into permanent, fixed visual images (memory) [potential energy].

Reading

Converts permanent, fixed visual images (memory) [potential energy] into ephemeral sounds (spoken words) and ideas (neural activity) [kinetic energy].

Word Systems

Proteins

are composed of sequences of amino acids, which come in twenty primary varieties, each with a three-letter abbreviation:-

ala	--	alanine
arg	--	arginine
asn	--	asparagine
asp	--	aspartic acid
cys	--	cysteine
gin	--	glutamine
glu	--	glutamic acid
gly	--	glycine
his	--	histidine
ile	--	isoleucine
leu	--	leucine
lys	--	lysine
met	--	methionine
phe	--	phenylalanine
pro	--	proline
ser	--	serme
thr	--	threonine
trp	--	tryptophan
tyr	--	tyrosine
val	--	valine

An amino acid is a small molecule about the size and complexity of a nucleotide.
Proteins are composed of sequences of about three hundred amino acids.
Enzymes are composed of about fifteen amino acids.

The Connectome: The Human Cell Atlas

The ‘.omes’

Genome	=	The full set of genes
Transcriptome	=	The RNA made from the genes
Proteome	=	The Proteins
Metabolome	=	Small Molecules. Sugars, fatty acids, amino acids, involved or generated by cellular processes
Fluxome	=	Metabolic reactions whose rates can vary under different conditions

The Genetic Code

The Genetic Code.

	U	C	A	G	
U	phe	ser	tyr	cys	U
	phe	ser	tyr	cys	C
	leu	ser	<i>punc.</i>	<i>punc.</i>	A
	leu	ser	<i>punc.</i>	trp	G
C	leu	pro	his	arg	U
	leu	pro	his	arg	C
	leu	pro	gln	arg	A
	leu	pro	gln	arg	G
A	ile	thr	asn	ser	U
	ile	thr	asn	ser	C
	ile	thr	lys	arg	A
	met	thr	lys	arg	G
G	val	ala	asp	gly	U
	val	ala	asp	gly	C
	val	ala	glu	gly	A
	val	ala	glu	gly	G

FIGURE 94. The Genetic Code, by which each triplet in a strand of messenger RNA codes for one of twenty amino acids (or a punctuation mark).

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