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# Vocabulary Builder Reference from...

Sergiu P. Pasca: How we're reverse engineering the human brain in the lab | TED Talk https://www.ted.com/talks/sergiu\_p\_pasca\_how\_we\_r e\_reverse\_engineering\_the\_human\_brain\_in\_the\_lab



# **Advanced Words Only**

#### **IMPORTANT**

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# **Session 1: Word List**

#### neuron

- a cell that is specialized to carry information within the brain and between the brain and other parts of the body
- synonym: nerve cell
- (1) excite the **neurons**, (2) **neuron** cell body

Our body transfers information along each **neuron** using an electrical impulse.

#### axon

- a long and slender projection of a nerve cell, or neuron, that sends out signals away from the nerve cell
- (1) an **axon** of a nerve cell, (2) the **axon** terminals We are developing a technology to promote the elongation and regeneration of sensory nerve **axons**.

#### contraction

- the act or process of becoming smaller or shorter in size, volume, or amount
- *synonym*: shrinking, compression, reduction
- (1) **contraction** of a disease, (2) **contraction** in the industry The **contraction** of the economy has led to job losses.

#### clump

- n. a small group of bushes, trees, flowers, people, etc.synonym: cluster, bunch, bundle
- (1) clump of bacteria, (2) a clump of trees

# I heard the **clump** of his boots in the hallway.

## organoid

 a laboratory-grown miniature version of a human organ, usually derived from stem cells, that can be used for studying development, diseases, and treatments

synonym: tissue, cell culture, organ culture

(1) **organoid** culture, (2) **organoid** research

The development of **organoids** has opened up new avenues for research into the early stages of fetal development

#### assembloid

 a hypothetical construct that describes a complex organization of different types of cells or tissues, such as a network of neurons or a cluster of organs, that work together in a coordinated way

synonym: artificial cell, synthetic cell, construct

(1) **assembloid** growth, (2) **assembloid** technology The **assembloid** cells were found to be highly malignant under the microscope.

#### unconventional

 adj. not following traditional or commonly accepted beliefs, practices, or customs; not conforming to established norms or standards

synonym: nontraditional, avant-garde, bizarre

(1) in an **unconventional** manner, (2) **unconventional** ideas

Her **unconventional** approach to teaching has been a hit with the students.

### depict

- v. to illustrate someone or something in a photograph synonym: illustrate, describe, express
- (1) **depict** a scene, (2) **depict** a feeling of isolation His son had accurately **depicted** the bloom.

# paraphrase

v. to restate or reword a passage in one's own words, often to clarify or simplify the original meaning

*synonym*: rephrase, reword, reinterpret

(1) paraphrase a poem into prose, (2) paraphrase the

### meaning

He **paraphrased** the article in his own words to avoid being accused of plagiarism.

#### poke

- v. to push or prod with a sharp object or the finger synonym: prod, jab, push
- (1) **poke** around the desk, (2) **poke** a fire They **poked** fun at each other's jokes, laughing and teasing.

#### mumbo

- n. a meaningless word or phrase used to distract, deceive or confuse someone; a type of African ceremonial mask
   synonym: nonsense, gibberish, hocus-pocus
- (1) **mumbo-jumbo** mystery, (2) science **mumbo** jumbo The politician's speech was **mumbo** jumbo and needed to be clearer to the audience.

# jumbo

an extremely large or heavy object; an African elephant that was exhibited in a circus in the late 19th century and early 20th century and became widely known as "Jumbo"

synonym: elephantine, mammoth, giant

(1) **jumbo** jet, (2) **jumbo** shrimp I need to buy a **jumbo-sized** bag of dog food for my large-breed puppy.

coax

 to persuade, encourage, or gently urge someone to do something; to manipulate or persuade something to work or function properly

synonym: persuade, cajole, lure

coax a confession, (2) coax a smile
 She tried to coax her cat out of the tree with a can of tuna.

# reprogram

- v. to modify or recreate a program synonym: recreate, modify, revamp
- (1) **reprogram** a device, (2) **reprogram** a database He **reprogrammed** the computer's operating system to

remove the safeguard.

### alchemy

n. a medieval chemical philosophy and speculative theory that aimed to transform base metals into gold or produce a universal elixir that could cure all diseases and grant immortality; a process of transformation or creation that appears magical or mysterious

*synonym*: sorcery, magic, transmutation

- (1) **alchemy** experiment, (2) **alchemy** of emotions Today, the study of **alchemy** remains an important part of the history of science and philosophy
- dissociation
- the separation of ideas, emotions, or memories from a person's consciousness; a process by which molecules or compounds separate into smaller units or individual atoms

*synonym*: separation, detachment, disconnection

(1) trauma-related **dissociation**, (2) **dissociation** reaction His **dissociation** from his emotions made him distant and unresponsive.

sparkle

v. to emit or reflect bright flashes of light, especially with animation and joy

*synonym*: shine, glimmer, twinkle

(1) **sparkle** like a gem, (2) **sparkle** from receiving light The diamond **sparkled** in the sunlight.

incubator

 an apparatus in which conditions are controlled for hatching eggs, growing cells, or keeping people or animals warm; a place, especially with support staff and equipment, offered at a low cost to new small businesses

*synonym*: hatchery, brooder, nursery

(1) infant **incubator**, (2) business **incubator** program
The eggs were placed in an artificial **incubator** to ensure proper hatching conditions.

#### postnatal

adj. referring to the period following the birth of a child or to any event or process occurring during that period

synonym: postpartum, after-birth, post-delivery

(1) postnatal care, (2) postnatal depression

After having a baby, women undergo **postnatal** checkups to monitor their physical and emotional health.

#### uterus

 a hollow muscular organ in the body of a woman or other female mammal in which a baby or young animal develops before birth

*synonym*: womb

(1) uterus cancer, (2) bleeding from uterus

The physician prescribed medication to relieve the contraction of the **uterus**.

#### underlie

v. to be the support, basis, hidden cause of something; to be located under or below

*synonym*: govern, control, determine

(1) **underlie** the theory of the big bang, (2) **underlie** the current economic deadlock

His bitter experiences underlie his moral principles.

#### decelerate

v. to slow down or reduce the speed of something; to decrease in speed

synonym: slow down, slacken, brake

(1) decelerate slowly, (2) decelerate approach

The driver had to **decelerate** quickly to avoid hitting the red light.

#### rejuvenate

 to make someone or something look or feel younger, fresher, or more lively

*synonym*: revitalize, renew, refresh

(1) **rejuvenate** a downtown area, (2) **rejuvenate** energy

The spa treatment promised to **rejuvenate** her skin and leave

her feeling refreshed.

#### minibrain

 a cluster of cells that can be grown in a laboratory and that mimics certain features of the brain often used as a model for studying essential brain function or for drug development

synonym: cerebral organoid, brain organoid, mini cerebrum

(1) **minibrain** in vitro models, (2) **minibrain** modeling The development of **minibrains** has revolutionized the study of neurological disorders.

#### societal

adj. relating to society or social relationshipssynonym: social, communal, cultural

(1) **societal** norms, (2) **societal** expectations

The **societal** pressure to conform is strong in this community.

#### fused

adj. joined together or combined into one; blended or integrated in a way that creates a new entity

synonym: merged, blended, united

(1) **fused** glass, (2) **fused** bones

The **fused** wires in the electrical circuit caused a power outage.

# schizophrenia

 a severe mental disorder in which a person has a distorted view of reality and may experience hallucinations, delusions, and disordered thinking and behavior

synonym: psychosis, disorder, mental illness

(1) **schizophrenia** spectrum disorder, (2) **schizophrenia** treatment

The **schizophrenia** patient was experiencing severe auditory hallucinations.

# psychiatry

 the branch of medicine concerned with the study, treatment, and prevention of mental illness

synonym: mental health, psychology, psychoanalysis

(1) **psychiatry** therapy, (2) biological **psychiatry**The field of **psychiatry** is constantly evolving, with new treatments and approaches being developed all the time.

#### medicinal

adj. of or relating to the treatment or cure of disease synonym: curative, therapeutic, healing

(1) medicinal chemistry, (2) traditional medicinal

The **medicinal** properties of this herb have been known to help with various ailments.

#### dissect

v. to cut into pieces to study the structure of something in detail

synonym: analyze, examine, study

(1) **dissect** the data, (2) **dissect** a personality

The scientist **dissected** the frog to study its internal organs.

# epilepsy

 a neurological disorder characterized by recurrent seizures or convulsions, which can manifest in a variety of ways and be caused by various factors

synonym: seizures, convulsions, fits

(1) **epilepsy** seizure, (2) **epilepsy** medication

The flashing lights at the concert triggered her **epilepsy** and caused a seizure.

#### revolutionize

v. to bring about a complete or radical change in something, often through the introduction of new methods or ideas

synonym: transform, innovate, modernize

(1) **revolutionize** the industry, (2) **revolutionize** the technology

The invention of the smartphone **revolutionized** the way we communicate with each other.

fuse

 a small part in an electrical device or machinery that can interrupt the flow of electrical current when it is overloaded; (verb) to become plastic or fluid or liquefied from heat

synonym: (verb) melt, (verb) blend

(1) **fuse** blows, (2) **fuse** with one another

He has a short **fuse**.

#### opportune

adj. suitable or happening at a time that is suitable or convenient for a particular purpose

synonym: suitable, timely, practical

(1) **opportune** occasion, (2) an **opportune** remark The phone rang at the most **opportune** time.

# neuropsychiatric

adj. relating to mental disorders that have a neurological or physiological basis or to the study of the interplay between neurological and psychiatric phenomena

synonym: neurobehavioral, neuropsychological, psychiatric

(1) **neuropsychiatric** disorder, (2) **neuropsychiatric** evaluation

Researchers are studying the **neuropsychiatric** effects of certain medications on the brain.

#### infect

v. to affect a person, an animal, or a plant with a disease-causing organism

*synonym*: pollute, contaminate, affect

(1) **infect** other animal species, (2) **infect** a computer with a virus

Children often infect parents with this head cold.

# polio

n. an acute infectious disease caused by a virus that attacks nerve cells in the spinal cord and brain, leading to paralysis, muscle weakness, and potentially lifelong disability

synonym: poliomyelitis, infantile paralysis

(1) polio epidemic, (2) polio eradication

The **polio** vaccine development is regarded as one of the greatest medical achievements of the 20th century.

#### statistician

- n. a person who studies or is an expert in statisticssynonym: actuary
- (1) professional **statisticians**, (2) environmental **statistician**

The firm employs several **statisticians** to develop a recommendation engine.

#### recreate

v. to make something that existed previously happen or appear to exist again

synonym: renovate, vivify, revive

(1) **recreate** a single country, (2) **recreate** the feeling of the 1920s

She **recreated** the atmosphere of the pre-war age with her stage setting.

# **Session 2: Spelling**

| 1. | in an uncnal manner      | adj.       | not following traditional or commonly accepted beliefs, practices, or customs; not conforming to established norms or standards   |
|----|--------------------------|------------|---|
| 2. | science muo jumbo        | n.         | a meaningless word or phrase used to<br>distract, deceive or confuse someone; a<br>type of African ceremonial mask  |
| 3. | rete a single country    | <i>v</i> . | to make something that existed previously happen or appear to exist again   |
| 4. | trauma-related dision    | n.         | the separation of ideas, emotions, or<br>memories from a person's<br>consciousness; a process by which<br>molecules or compounds separate into<br>smaller units or individual atoms |
| 5. | det a scene              | <i>v</i> . | to illustrate someone or something in a photograph  |
| 6. | decte approach           | <i>v</i> . | to slow down or reduce the speed of something; to decrease in speed   |
| 7. | the a_n terminals        | n.         | a long and slender projection of a nerve<br>cell, or neuron, that sends out signals<br>away from the nerve cell   |
| 8. | schnia spectrum disorder | n.         | a severe mental disorder in which a<br>person has a distorted view of reality<br>and may experience hallucinations,<br>delusions, and disordered thinking and<br>behavior           |
|    |                          |            |   |

ANSWERS: 1. unconventional, 2. mumbo, 3. recreate, 4. dissociation, 5. depict, 6. decelerate, 7. axon, 8. schizophrenia

ANSWERS: 9. dissect, 10. clump, 11. paraphrase, 12. postnatal, 13. dissociation, 14. medicinal, 15. jumbo, 16. epilepsy, 17. recreate

ANSWERS: 25. revolutionize, 26. opportune, 27. paraphrase, 28. mumbo, 29. poke, 30. assembloid, 31. revolutionize, 32. psychiatry, 33. infect, 34. rejuvenate

ANSWERS: 35. statistician, 36. incubator, 37. societal, 38. polio, 39. uterus, 40. infect, 41. clump, 42. decelerate, 43. societal, 44. contraction, 45. fused

ANSWERS: 54. statistician, 55. jumbo, 56. polio, 57. organoid, 58. coax, 59. postnatal, 60. contraction, 61. fuse

| Vocab | -Builder Ref from "Sergiu P. Pasca: How we're reverse | engir | neering the human brain in the lab   TED Talk" (39 words)  |
|-------|---|-------|--|
| 62.   | an an of a nerve cell                                 | n.    | a long and slender projection of a nerve<br>cell, or neuron, that sends out signals<br>away from the nerve cell  |
| 63.   | epsy seizure  | n.    | a neurological disorder characterized by<br>recurrent seizures or convulsions, which<br>can manifest in a variety of ways and be<br>caused by various factors  |
| 64.   | rejte a downtown area                                 | ν.    | to make someone or something look or feel younger, fresher, or more lively   |
| 65.   | spe like a gem  | v.    | to emit or reflect bright flashes of light, especially with animation and joy  |
| 66.   | excite the nens                                       | n.    | a cell that is specialized to carry information within the brain and between the brain and other parts of the body   |
| 67.   | pe a fire   | v.    | to push or prod with a sharp object or the finger  |
| 68.   | meal chemistry  | adj.  | of or relating to the treatment or cure of disease   |
| 69.   | aly experiment  | n.    | a medieval chemical philosophy and<br>speculative theory that aimed to<br>transform base metals into gold or<br>produce a universal elixir that could<br>cure all diseases and grant immortality;<br>a process of transformation or creation<br>that appears magical or mysterious |
| 70.   | infant inor   | n.    | an apparatus in which conditions are controlled for hatching eggs, growing cells, or keeping people or animals warm; a place, especially with support staff and equipment, offered at a low cost to new small businesses   |
|       |   |       |  |

ANSWERS: 62. axon, 63. epilepsy, 64. rejuvenate, 65. sparkle, 66. neuron, 67. poke, 68. medicinal, 69. alchemy, 70. incubator

| 71. | aly of emotions            | n.         | a medieval chemical philosophy and<br>speculative theory that aimed to<br>transform base metals into gold or<br>produce a universal elixir that could<br>cure all diseases and grant immortality;<br>a process of transformation or creation<br>that appears magical or mysterious |
|-----|----------------------------|------------|--|
| 72. | ream a database            | <i>v</i> . | to modify or recreate a program  |
| 73. | miin in vitro models       | n.         | a cluster of cells that can be grown in a laboratory and that mimics certain features of the brain often used as a model for studying essential brain function or for drug development   |
| 74. | fe blows                   | n.         | a small part in an electrical device or<br>machinery that can interrupt the flow of<br>electrical current when it is overloaded;<br>(verb) to become plastic or fluid or<br>liquefied from heat  |
| 75. | det a feeling of isolation | v.         | to illustrate someone or something in a photograph   |
| 76. | ream a device              | <i>v</i> . | to modify or recreate a program  |
| 77. | psyry therapy              | n.         | the branch of medicine concerned with<br>the study, treatment, and prevention of<br>mental illness   |
| 78. | dit the data               | v.         | to cut into pieces to study the structure of something in detail   |
|     |                            |            |  |

ANSWERS: 71. alchemy, 72. reprogram, 73. minibrain, 74. fuse, 75. depict, 76. reprogram, 77. psychiatry, 78. dissect

# **Session 3: Fill in the Blanks**

| 1.  | The development of has opened up new avenues for research into the early stages of fetal development  |
|-----|---|
| n.  | a laboratory-grown miniature version of a human organ, usually derived from stem cells, that can be used for studying development, diseases, and treatments               |
| 2.  | We are developing a technology to promote the elongation and regeneration of sensory nerve  |
| n.  | a long and slender projection of a nerve cell, or neuron, that sends out signals away from the nerve cell   |
| 3.  | I need to buy a bag of dog food for my large-breed puppy.   |
| n.  | an extremely large or heavy object; an African elephant that was exhibited in a circus in the late 19th century and early 20th century and became widely known as "Jumbo" |
| 4.  | The patient was experiencing severe auditory hallucinations.  |
| n.  | a severe mental disorder in which a person has a distorted view of reality and may experience hallucinations, delusions, and disordered thinking and behavior             |
| 5.  | Researchers are studying the effects of certain medications on the brain.   |
| adj | relating to mental disorders that have a neurological or physiological basis or to the study of the interplay between neurological and psychiatric phenomena              |
| 6.  | She tried to her cat out of the tree with a can of tuna.  |
| v.  | to persuade, encourage, or gently urge someone to do something; to manipulate or persuade something to work or function properly  |
|     | SWERS: 1. organoids, 2. axons, 3. jumbo-sized, 4. schizophrenia, 5.<br>uropsychiatric, 6. coax  |

| 37. | He the article in his own words to avoid being accused of plagiarism.   |  |
|-----|---|--|
| v.  | to restate or reword a passage in one's own words, often to clarify or simplify the original meaning  |  |
| 38. | His son had accurately the bloom.   |  |
| v.  | to illustrate someone or something in a photograph  |  |
| 39. | He has a short  |  |
| n.  | <ul> <li>a small part in an electrical device or machinery that can interrupt the flow of<br/>electrical current when it is overloaded; (verb) to become plastic or fluid or<br/>liquefied from heat</li> </ul> |  |
|     |   |  |

ANSWERS: 37. paraphrased, 38. depicted, 39. fuse