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Vocabulary Builder Reference from...

Sean Carroll: Distant time and the hint of a multiverse | TED Talk

https://www.ted.com/talks/sean_carroll_distant_time_ and the hint of a multiverse



Advanced Words Only

IMPORTANT

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Session 1: Word List

blob

a small amount or drop of a thick liquid or sticky substance

synonym: chunk, lump, hunk

(1) a big **blob** of yellow, (2) a **blob** of jelly

A **blob** of ink fell on the floor.

observable

adi. that can be noticed or seen

synonym: visible, perceptible, detectable

(1) **observable** change, (2) experimentally **observable**

Any theorem relies on both **observable** fact and assumption.

ancestor

a person from whom one is descended; a forefather

synonym: forebear, forefather, progenitor

(1) ancestor language, (2) earliest human ancestor

My remote **ancestor** immigrated to the United States from

Ireland in the 1800s.

cosmology

the scientific study of the nature and origin of the universe

synonym: COSMOGONY

(1) physical **cosmology**, (2) modern **cosmology**

Cosmology evolved from people's philosophical questions

about the natural world.

gravitational

adj. relating to or caused by gravity (= the force that attracts objects towards one another)

synonym: weighty, heavy, earthbound

(1) gravitational energy, (2) gravitational waves

The **gravitational** force of the black hole was so strong that nothing, not even light, could escape.

imperfectly

adv. in a faulty or incomplete way

synonym: amiss, insufficiently, clumsily

(1) **imperfectly** developed, (2) **imperfectly** known disease He created an **imperfectly** shaped torso.

physicist

- n. a scientist who specializes in the field of physics
- (1) talented **physicist**, (2) theoretical **physicist**Einstein was an outstanding and famous **physicist** of the 20th century.

entropy

- n. a scientific concept that is most commonly associated with a state of disorder, randomness, or uncertaintysynonym: randomness
- (1) **entropy** calculation, (2) **entropy** conservation Since the second law of thermodynamics is applicable to the universe, the **entropy** of the universe continues to increase.

chaotic

- adj. without any order or organization; extremely disorganized, unpredictable, and confusing
- synonym: disorderly, cluttered, topsy-turvy
- (1) the **chaotic** economic situation, (2) **chaotic** theory Change is also occurring in Turkey as a result of **chaotic** reform.

engrave

to carve, cut, or etch a design, message, or image onto a surface, often using a sharp tool or laser; to permanently record or mark something in a lasting manner synonym: carve, inscribe, etch

(1) engrave initials, (2) engrave metal

He wanted to **engrave** his wedding ring with their initials as a lasting symbol of their love.

quants

n. quantitative analysts or individuals who specialize in using quantitative methods, including mathematical and statistical modeling, in analyzing financial markets and making investment decisions

synonym: quantitative analysts, number crunchers, data scientists

(1) the team of **quants**, (2) industry **quants**Many financial **quants** work in investment banks, using complex mathematical models to analyze financial data.

rearrange

v. to change the order or position of things already made; to change the time, date, or place of an event already planned

synonym: readjust, reorganize, reconstruct

(1) **rearrange** the furniture, (2) **rearrange** his schedule Please **rearrange** these files as we start a new project tomorrow.

macroscopic

adj. visible to the naked eye; relating to objects or phenomena that are large enough to be seen without the aid of a microscope or other magnifying tools

synonym: large, visible, apparent

(1) **macroscopic** observation, (2) **macroscopic** anatomy The **macroscopic** view of the galaxy is simply breathtaking.

thermodynamics

- the area of physics that deals with heat, work, and temperature and their relation to energy, entropy, and the physical properties of matter and radiation
- (1) applied **thermodynamics**, (2) the laws of **thermodynamics**

The second law of **thermodynamics** denies the existence of a perpetual motion engine.

gravitation

n. the force by which a celestial body, such as the Earth, pulls objects toward its center; the attraction between two or more objects due to their mass

synonym: attraction, pull, gravity

(1) terrestrial **gravitation**, (2) universal **gravitation**The force of **gravitation** keeps the planets in our solar system in orbit around the sun.

speculate

v. to form a theory or conjecture or guess about a subject without solid evidence

synonym: assume, conjecture, infer

(1) **speculate** about the reason, (2) **speculate** on the outcome

He **speculated** that this investment would lead to success.

centimeter

- a unit of measurement of length in the metric system,
 equivalent to one-hundredth of a meter
- (1) **centimeter** measurement, (2) thirty **centimeters** tall The room was only one **centimeter** wider than the piano, making it a tight fit.

exert

- v. to put forth effort; to put into action; to bring into play synonym: exert, apply, use
- (1) exert control, (2) exert influenceHe exerted himself to lift the heavyweight.

perpetual

- adj. continuing for an extended period in the same way without stopping or being interruptedsynonym: enduring, unchanging, incessant
- (1) **perpetual** motion machine, (2) **perpetual** struggle

The company employs a **perpetual** inventory system.

dilute

v. to make a substance less concentrated by adding a liquid or another substance to it

synonym: weaken, thin, reduce

(1) dilute acid with water, (2) dilute a great idea

She diluted the concentrated juice with water.

hawk

 a bird of prey typically having short rounded wings and a long tail; an advocate of an aggressive policy on foreign relations

synonym: militarist, jingo, aggressor

(1) cast off a hawk, (2) congressional hawk

That team signed a center forward who was a ball- hawk.

emit

v. to give off or send out something such as light, heat, sound, gas, etc.

synonym: give off, radiate, expel

(1) **emit** a gamma ray, (2) **emit** air pollution

During the unloading, the container box **emits** a clicking sound.

curvature

n. the degree to which a line or surface deviates from being straight or flat; a measure of the amount of bending of a curve

synonym: bend, arch, bow

(1) the degree of **curvature**, (2) spinal **curvature**The **curvature** of the earth can be seen from space.

fluctuation

 a change, or the process of changing, that frequently happens, especially from one extreme to another; the quality of being unsteady and subject to changes

synonym: change, instability, flux

(1) price **fluctuations**, (2) **fluctuation** of water level Temperature **fluctuations** are often milder in oceanfront areas.

radiate

v. to spread out or emit something, such as light or heat, in all directions

synonym: give off, scatter, beam

(1) **radiate** an aura, (2) **radiate** in all directions Roads **radiate** from the famous building in the center of the city.

probabilistic

adj. characterized by the influence of chance or probability; involving the use of statistical models or methods to estimate likelihoods or risks

synonym: probable, statistical, likely

(1) **probabilistic** model, (2) **probabilistic** approach In a **probabilistic** system, the outcome is uncertain and can vary based on chance.

suffocate

 to die or cause someone to die from lack of air or inability to breathe; to be overwhelmed or constricted by a feeling or situation, such as anxiety or oppression

synonym: choke, smother, stifle

(1) **suffocate** to death, (2) **suffocate** fire People can **suffocate** from a lack of oxygen in confined spaces.

Newtonian

adj. relating to Sir Isaac Newton or his laws of motion and universal gravitation

synonym: classical, physics, mechanics

(1) **Newtonian** physics, (2) **Newtonian** mechanics

The motion of planets can be described using **Newtonian** mechanics.

multiverse

- n. a hypothetical space or realm consisting of multiple universes, of which our universe is just one of them
- (1) the **multiverse** hypothesis, (2) the concept of the **multiverse**

The various universes within the **multiverse** are sometimes called parallel universes.

anthropology

- n. the scientific study of humanity, concerned with human behavior, human biology, cultures, societies, and linguistics in both the present and past, including past human species
- (1) social **anthropology**, (2) **anthropology** of religion The areas of **anthropology** and psychology are significantly related to one another.

fluctuate

 to rise and fall irregularly or unexpectedly; to vary or change often and unpredictably

synonym: vary, oscillate, sway

(1) fluctuate prices, (2) fluctuate rapidly

Stock prices **fluctuate** daily based on market demand and supply.

contemplate

v. to think about a possible future action or to think about something for a long time thoughtfully

synonym: think over, ponder, consider

(1) **contemplate** a marriage, (2) **contemplated** leaving school

I recently **contemplated** dropping out of school and getting a full-time job.

orchard

 a piece of land that is planted with fruit trees, such as apples, pears, or cherries

synonym: grove, plantation, fruit garden

(1) local apple orchard, (2) orchard tree

The farmer owns an **orchard** where he grows apples, pears, and plums.

evaporate

v. to turn a liquid into a gas; to become less intense and disappear gradually

synonym: vaporize, disappear, vanish

(1) **evaporate** the water, (2) **evaporate** almost overnight The sun will **evaporate** the mist.

afterglow

n. a period of time following an event or experience during which a feeling of pleasure, satisfaction, or contentment persists; a lingering glow or light that remains after an object has disappeared from view

synonym: glow, sunset, twilight

(1) concert afterglow, (2) romantic afterglow

The **afterglow** of the sunset was a beautiful end to a long day.

brute

 a violent, wild, or feral animal; a person who is cruel, uncivilized, or lacking in intelligence or sensitivity; a physical force or power

synonym: beast, savage, animal

(1) brute beasts, (2) brute force

The **brute** behavior of the football players caused the game to be canceled.

unbroken

adj. continuous and not interrupted; (of promises or contracts) not violated or disregarded

synonym: intact, unchanged, continuing

(1) an unbroken horse, (2) unbroken chain

He enjoyed the unbroken quiet of the afternoon at the villa.

vindicate

 to clear someone or something of blame, suspicion, or doubt; to show or prove that someone or something is right or justified

synonym: justify, absolve, exonerate

(1) **vindicate** innocence, (2) **vindicate** his reputation The athlete's exceptional performance **vindicated** their coach's training methods and strategies.

Session 2: Spelling

1.	cener measurement	n.	a unit of measurement of length in the metric system, equivalent to one-hundredth of a meter
2.	concert afow	n.	a period of time following an event or experience during which a feeling of pleasure, satisfaction, or contentment persists; a lingering glow or light that remains after an object has disappeared from view
3.	theoretical phst	n.	a scientist who specializes in the field of physics
4.	the chc economic situation	adj.	without any order or organization; extremely disorganized, unpredictable, and confusing
5.	fluon of water level	n.	a change, or the process of changing, that frequently happens, especially from one extreme to another; the quality of being unsteady and subject to changes
6.	macic observation	adj.	visible to the naked eye; relating to objects or phenomena that are large enough to be seen without the aid of a microscope or other magnifying tools
7.	congressional hk	n.	a bird of prey typically having short rounded wings and a long tail; an advocate of an aggressive policy on foreign relations
8.	a big bb of yellow	n.	a small amount or drop of a thick liquid or sticky substance

ANSWERS: 1. centimeter, 2. afterglow, 3. physicist, 4. chaotic, 5. fluctuation, 6. macroscopic, 7. hawk, 8. blob

9.	cast off a hk	n.	a bird of prey typically having short rounded wings and a long tail; an advocate of an aggressive policy on foreign relations
10.	peal motion machine	adj.	continuing for an extended period in the same way without stopping or being interrupted
11.	spte about the reason	<i>v</i> .	to form a theory or conjecture or guess about a subject without solid evidence
12.	protic model	adj.	characterized by the influence of chance or probability; involving the use of statistical models or methods to estimate likelihoods or risks
13.	vite innocence	ν.	to clear someone or something of blame, suspicion, or doubt; to show or prove that someone or something is right or justified
14.	bre force	n.	a violent, wild, or feral animal; a person who is cruel, uncivilized, or lacking in intelligence or sensitivity; a physical force or power
15.	rege the furniture	<i>v</i> .	to change the order or position of things already made; to change the time, date or place of an event already planned
16.	the laws of theics	n.	the area of physics that deals with heat, work, and temperature and their relation to energy, entropy, and the physical properties of matter and radiation
17.	obsle change	adj.	that can be noticed or seen

ANSWERS: 9. hawk, 10. perpetual, 11. speculate, 12. probabilistic, 13. vindicate, 14. brute, 15. rearrange, 16. thermodynamics, 17. observable

18.	vite his reputation	v.	to clear someone or something of blame, suspicion, or doubt; to show or prove that someone or something is right or justified
19.	a bb of jelly	n.	a small amount or drop of a thick liquid or sticky substance
20.	rege his schedule	ν.	to change the order or position of things already made; to change the time, date, or place of an event already planned
21.	experimentally obsle	adj.	that can be noticed or seen
22.	Nean physics	adj.	relating to Sir Isaac Newton or his laws of motion and universal gravitation
23.	bre beasts	n.	a violent, wild, or feral animal; a person who is cruel, uncivilized, or lacking in intelligence or sensitivity; a physical force or power
24.	protic approach	adj.	characterized by the influence of chance or probability; involving the use of statistical models or methods to estimate likelihoods or risks
25.	ene metal	v.	to carve, cut, or etch a design, message, or image onto a surface, often using a sharp tool or laser; to permanently record or mark something in a lasting manner
26.	die acid with water	v.	to make a substance less concentrated by adding a liquid or another substance to it
27.	eny conservation	n.	a scientific concept that is most commonly associated with a state of

ANSWERS: 18. vindicate, 19. blob, 20. rearrange, 21. observable, 22. Newtonian, 23. brute, 24. probabilistic, 25. engrave, 26. dilute, 27. entropy

disorder, randomness, or uncertainty

28. r	modern cogy	n.	the scientific study of the nature and origin of the universe
29. ι	universal graon	n.	the force by which a celestial body, such as the Earth, pulls objects toward its center; the attraction between two or more objects due to their mass
30. p	orice fluons	n.	a change, or the process of changing, that frequently happens, especially from one extreme to another; the quality of being unsteady and subject to changes
31. c	chc theory	adj.	without any order or organization; extremely disorganized, unpredictable, and confusing
32. p	peal struggle	adj.	continuing for an extended period in the same way without stopping or being interrupted
33. c	ord tree	n.	a piece of land that is planted with fruit trees, such as apples, pears, or cherries
34. f	flte rapidly	<i>v</i> .	to rise and fall irregularly or unexpectedly; to vary or change often and unpredictably
35. a	an unen horse	adj.	continuous and not interrupted; (of promises or contracts) not violated or disregarded
36. i	mply developed	adv.	in a faulty or incomplete way
37. t	the mulse hypothesis	n.	a hypothetical space or realm consisting of multiple universes, of which our universe is just one of them
38. €	ext influence	ν.	to put forth effort; to put into action; to bring into play

ANSWERS: 28. cosmology, 29. gravitation, 30. fluctuation, 31. chaotic, 32. perpetual, 33. orchard, 34. fluctuate, 35. unbroken, 36. imperfectly, 37. multiverse, 38. exert

39.	conted leaving school	ν.	to think about a possible future action or to think about something for a long time thoughtfully
40.	ext control	<i>v</i> .	to put forth effort; to put into action; to bring into play
41.	industry qus	n.	quantitative analysts or individuals who specialize in using quantitative methods, including mathematical and statistical modeling, in analyzing financial markets and making investment decisions
42.	rae in all directions	<i>v</i> .	to spread out or emit something, such as light or heat, in all directions
43.	granal waves	adj.	relating to or caused by gravity (= the force that attracts objects towards one another)
44.	physical cogy	n.	the scientific study of the nature and origin of the universe
45.	spinal cure	n.	the degree to which a line or surface deviates from being straight or flat; a measure of the amount of bending of a curve
46.	terrestrial graon	n.	the force by which a celestial body, such as the Earth, pulls objects toward its center; the attraction between two or more objects due to their mass
47.	flte prices	<i>v</i> .	to rise and fall irregularly or unexpectedly; to vary or change often and unpredictably

ANSWERS: 39. contemplate, 40. exert, 41. quants, 42. radiate, 43. gravitational, 44. cosmology, 45. curvature, 46. gravitation, 47. fluctuate

48.	die a great idea	<i>v</i> .	to make a substance less concentrated by adding a liquid or another substance to it
49.	imply known disease	adv.	in a faulty or incomplete way
50.	earliest human anor	n.	a person from whom one is descended; a forefather
51.	conte a marriage	ν.	to think about a possible future action of to think about something for a long time thoughtfully
52.	the concept of the mulse	n.	a hypothetical space or realm consisting of multiple universes, of which our universe is just one of them
53.	evte almost overnight	<i>v</i> .	to turn a liquid into a gas; to become less intense and disappear gradually
54.	ene initials	ν.	to carve, cut, or etch a design, message, or image onto a surface, often using a sharp tool or laser; to permanently record or mark something in a lasting manner
55.	spte on the outcome	<i>v</i> .	to form a theory or conjecture or guess about a subject without solid evidence
56.	antogy of religion	n.	the scientific study of humanity, concerned with human behavior, human biology, cultures, societies, and linguistics in both the present and past, including past human species
57.	social antogy	n.	the scientific study of humanity, concerned with human behavior, human biology, cultures, societies, and linguistics in both the present and past, including past human species

ANSWERS: 48. dilute, 49. imperfectly, 50. ancestor, 51. contemplate, 52. multiverse, 53. evaporate, 54. engrave, 55. speculate, 56. anthropology, 57. anthropology

58.	talented phst	n.	a scientist who specializes in the field of physics
59.	the team of qus	n.	quantitative analysts or individuals who specialize in using quantitative methods, including mathematical and statistical modeling, in analyzing financial markets and making investment decisions
60.	sute to death	<i>v</i> .	to die or cause someone to die from lack of air or inability to breathe; to be overwhelmed or constricted by a feeling or situation, such as anxiety or oppression
61.	et a gamma ray	<i>v</i> .	to give off or send out something such as light, heat, sound, gas, etc.
62.	unen chain	adj.	continuous and not interrupted; (of promises or contracts) not violated or disregarded
63.	romantic afow	n.	a period of time following an event or experience during which a feeling of pleasure, satisfaction, or contentment persists; a lingering glow or light that remains after an object has disappeared from view
64.	thirty ceners tall	n.	a unit of measurement of length in the metric system, equivalent to one-hundredth of a meter
65.	Nean mechanics	adj.	relating to Sir Isaac Newton or his laws of motion and universal gravitation
66.	rae an aura	ν.	to spread out or emit something, such as light or heat, in all directions

ANSWERS: 58. physicist, 59. quants, 60. suffocate, 61. emit, 62. unbroken, 63. afterglow, 64. centimeter, 65. Newtonian, 66. radiate

67.	anor language	n.	a person from whom one is descended; a forefather
68.	et air pollution	<i>v</i> .	to give off or send out something such as light, heat, sound, gas, etc.
69.	applied theics	n.	the area of physics that deals with heat, work, and temperature and their relation to energy, entropy, and the physical properties of matter and radiation
70.	local apple ord	n.	a piece of land that is planted with fruit trees, such as apples, pears, or cherries
71.	eny calculation	n.	a scientific concept that is most commonly associated with a state of disorder, randomness, or uncertainty
72.	granal energy	adj.	relating to or caused by gravity (= the force that attracts objects towards one another)
73.	sute fire	v.	to die or cause someone to die from lack of air or inability to breathe; to be overwhelmed or constricted by a feeling or situation, such as anxiety or oppression
74.	evte the water	<i>v</i> .	to turn a liquid into a gas; to become less intense and disappear gradually
75.	the degree of cure	n.	the degree to which a line or surface deviates from being straight or flat; a measure of the amount of bending of a curve
76.	macic anatomy	adj.	visible to the naked eye; relating to objects or phenomena that are large enough to be seen without the aid of a microscope or other magnifying tools

ANSWERS: 67. ancestor, 68. emit, 69. thermodynamics, 70. orchard, 71. entropy, 72. gravitational, 73. suffocate, 74. evaporate, 75. curvature, 76. macroscopic

Vocab-Builder Ref from	"Sean Carroll:	Distant time an	d the hint of a	multiverse	TED Talk" (38	words)
ANSWERS:						
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Session 3: Fill in the Blanks

1.	He enjoyed the quiet of the afternoon at the villa.
	continuous and not interrupted; (of promises or contracts) not violated or disregarded
2.	The of the sunset was a beautiful end to a long day.
n.	a period of time following an event or experience during which a feeling of pleasure, satisfaction, or contentment persists; a lingering glow or light that remains after an object has disappeared from view
3.	Einstein was an outstanding and famous of the 20th century.
n.	a scientist who specializes in the field of physics
4.	He himself to lift the heavyweight.
v.	to put forth effort; to put into action; to bring into play
5.	The athlete's exceptional performance their coach's training methods and strategies.
v.	to clear someone or something of blame, suspicion, or doubt; to show or prove that someone or something is right or justified
6.	Any theorem relies on both fact and assumption.
adj	that can be noticed or seen
7.	That team signed a center forward who was a ball
n.	a bird of prey typically having short rounded wings and a long tail; an advocate of an aggressive policy on foreign relations
	SWERS: 1. unbroken, 2. afterglow, 3. physicist, 4. exerted, 5. vindicated, 6.

13. gravitational, 14. orchard, 15. chaotic

16.	The room was only one wider than the piano, making it a tight fit.
n.	a unit of measurement of length in the metric system, equivalent to one-hundredth of a meter
17.	Please these files as we start a new project tomorrow.
<i>v</i> .	to change the order or position of things already made; to change the time, date, or place of an event already planned
18.	I recently dropping out of school and getting a full-time job.
<i>v</i> .	to think about a possible future action or to think about something for a long time thoughtfully
19.	People can from a lack of oxygen in confined spaces.
v.	to die or cause someone to die from lack of air or inability to breathe; to be overwhelmed or constricted by a feeling or situation, such as anxiety or oppression
20.	My remote immigrated to the United States from Ireland in the 1800s.
n.	a person from whom one is descended; a forefather
21.	Roads from the famous building in the center of the city.
v.	to spread out or emit something, such as light or heat, in all directions
22.	Since the second law of thermodynamics is applicable to the universe, the of the universe continues to increase.
n.	a scientific concept that is most commonly associated with a state of disorder, randomness, or uncertainty
23.	Temperature are often milder in oceanfront areas.
n.	a change, or the process of changing, that frequently happens, especially from one extreme to another; the quality of being unsteady and subject to changes
	SWERS: 16. centimeter, 17. rearrange, 18. contemplated, 19. suffocate, 20. estor, 21. radiate, 22. entropy, 23. fluctuations

imperfectly, 29. quants, 30. probabilistic

31. The behavior of the football players caused the game to be canceled. n. a violent, wild, or feral animal; a person who is cruel, uncivilized, or lacking in intelligence or sensitivity; a physical force or power
32. The motion of planets can be described using mechanics. adj. relating to Sir Isaac Newton or his laws of motion and universal gravitation
33. The sun will the mist.
v. to turn a liquid into a gas; to become less intense and disappear gradually
34. He wanted to his wedding ring with their initials as a lasting symbol of their love.
v. to carve, cut, or etch a design, message, or image onto a surface, often using a sharp tool or laser; to permanently record or mark something in a lasting manner
35. The company employs a inventory system.
adj. continuing for an extended period in the same way without stopping or being interrupted
36. A of ink fell on the floor.
n. a small amount or drop of a thick liquid or sticky substance
37. During the unloading, the container box a clicking sound.
v. to give off or send out something such as light, heat, sound, gas, etc.
38. He that this investment would lead to success.
v. to form a theory or conjecture or guess about a subject without solid evidence
ANSWERS: 31. brute, 32. Newtonian, 33. evaporate, 34. engrave, 35. perpetual, 36. blob, 37. emits, 38. speculated

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ANSWERS:						
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