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Vocabulary Builder Reference from...

Benoit Mandelbrot: Fractals and the art of roughness | TED Talk

https://www.ted.com/talks/benoit_mandelbrot_fractals_and_the_art_of_roughness

Advanced Words Only

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Session 1: Word List

controllable

adj. able to be controlled or directed

synonym: manageable, governable, submissive

(1) computer- **controllable**, (2) **controllable** aircraft

The new software is much more **controllable** and user-friendly.

fluke

n. a stroke of luck or chance, often resulting in a positive outcome or unexpected success; an accidental or unplanned occurrence

synonym: chance, accident, stroke of luck

(1) lucky **fluke**, (2) **fluke** accident

Winning the lottery was just a **fluke**; I didn't expect it to happen.

amazement

n. a state of great surprise or wonder caused by something extraordinary or unexpected

synonym: astonishment, wonder, surprise

(1) express **amazement**, (2) feeling of **amazement**

The magician's disappearing act left the audience in **amazement**.

regularity

n. the quality or state of being done often; conformity to a set of rules, standards, or expectations; the state of

occurring with a consistent or predictable pattern or frequency

synonym : consistency, uniformity, regularness

(1) the **regularity** of his breathing, (2) sleep **regularity**

The **regularity** of exercise is important for maintaining good health.

cauliflower

n. a vegetable that belongs to the same family as broccoli and cabbage, characterized by a compact head of central florets surrounded by green leaves, commonly used in cooking and preparation of various cuisines

(1) **cauliflower** cheese, (2) **cauliflower** curry

I love to roast **cauliflower** with garlic and olive oil for a healthy side dish.

floret

n. a small or individual flower, especially one of the many small flowers making up a composite flower head, such as those found in the daisy or sunflower family

synonym : blossom, bud, bloom

(1) small **floret**, (2) colorful **floret**

The chef garnished the dish with a delicate **floret** of broccoli.

numb

adj. unable to feel physical sensation and movement; not showing human feeling or sensitivity

synonym : dazed, insensitive, emotionless

(1) **numb** with cold, (2) a **numb** mind

My left arm became **numb**.

hasten

v. to move or act quickly; to cause or encourage something to happen sooner or more rapidly; to accelerate or speed up

synonym : accelerate, hurry, rush

(1) **hasten** the process, (2) **hasten** the arrival

I need to **hasten** my speed to finish the race on time.

coastline

n. the particular shape of the coast (= the shore of a sea or ocean) as seen from the sea

synonym : shoreline, seashore, beach

(1) **coastline** erosion, (2) deeply indented **coastline**

The new resort was built along the **coastline**, offering stunning ocean views from every room.

fallacy

n. a mistaken belief, idea, or argument that is not supported by facts or evidence; a deceptive or misleading statement or belief

synonym : falsity, misconception, delusion

(1) **fallacy** of logic, (2) belief in a **fallacy**

Many people cling to the **fallacy** that they can get rich quickly, despite all evidence.

crank

n. a mechanical device that converts rotary motion into linear motion or vice versa; an eccentric or unpredictable person

synonym : eccentric, oddball, kook

(1) **crank** handle, (2) **crank** caller

The fishing reel had a **crank** that made it easy to reel in the catch.

time-consuming

adj. requiring a significant amount of time or effort to complete

synonym : lengthy, prolonged, protracted

(1) **time-consuming** project, (2) **time-consuming** process

Writing a research paper can be a **time-consuming** task.

bronchus

n. (in the plural, "bronchi") either of the two main branches of the trachea that lead to the lungs and distribute air to the bronchioles and alveoli

synonym : bronchi, airway, tube

(1) left **bronchus**, (2) **bronchus** wall

Smoking damages the **bronchus** and increases the risk of lung cancer.

mucus

n. a slimy liquid produced inside the nose and other body parts for lubrication, protection, etc.

synonym : secretion, slime, saliva

(1) airway **mucus**, (2) nasal **mucus**

When the body temperature drops, **mucus** secretion fails.

rodent

n. a small, gnawing mammal, such as a mouse, rat, or squirrel, that has sharp incisors and typically has a long, thin tail

synonym : mouse, rat, hamster

(1) **rodent** repellent, (2) prevent **rodent** damage

He set up a trap to catch the **rodent**.

seer

n. someone who is believed to have the power of prophecy or foretelling the future; a prophet or fortune-teller

synonym : prophet, oracle, visionary

(1) **seer** stone, (2) famous **seer**

The wise old **seer** instructed the young prince to rule his kingdom.

shatter

v. to break suddenly into many pieces

synonym : break, crash, destroy

(1) **shatter** the plate, (2) **shatter** a world record

Her husband's death **shattered** her life entirely.

algae

n. A simple plant that grows in or near water and lacks typical leaves and roots

(1) **algae** biofuel, (2) blue **algae**

Algae has jammed the inlet to the water turbine.

fractal

n. a complex geometric pattern or shape that repeats itself on smaller and smaller scales, often occurring in nature or mathematical equations

synonym : pattern, design, geometry

(1) **fractal** pattern, (2) **fractal** art

The coastline of Norway is one of the most famous examples of **fractal** geometry in nature.

astonishing

adj. surprising or shocking; difficult to believe

synonym : surprising, shocking, astounding

(1) **astonishing** achievement, (2) make **astonishing** gains
The news of her sudden death was **astonishing** to everyone who knew her.

motto

n. a phrase or slogan that expresses a guiding principle or goal

synonym : slogan, catchphrase, phrase

(1) the **motto** for safe traffic, (2) company **motto**
The company's **motto** is "Innovation and Service," which is reflected in its products and customer support.

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.

forgery

n. the act of creating a fake or false document, object, or currency to deceive or defraud others; the item that has been created in such a way

synonym : counterfeit, fake, imitation

(1) **forgery** scam, (2) passport **forgery**

The art museum was forced to close down temporarily due to concerns over **forgery** in their collection.

discontinue

v. to cease or stop doing something; to interrupt or terminate something that is already ongoing or in progress

synonym : halt, end, cease

(1) **discontinue** a service, (2) **discontinue** a project

The company has decided to **discontinue** the production of its unpopular product line.

nuisance

n. something or someone that causes annoyance, inconvenience, or discomfort; an unpleasant or irritating thing or person

synonym : bother, annoyance, disturbance

(1) traffic **nuisance**, (2) **nuisance** call

The barking dog next door is becoming quite a **nuisance**.

germ

n. a very tiny living that causes the disease; a piece of something such as an organism, concept, etc., capable of growing into a new one or part of one

synonym : bacterium, microbe, pathogen

(1) antibiotic-resistant **germ**, (2) a **germ-free** environment

The **germ** of his idea came from watching birds flying in flocks.

vanish

v. disappear or stop being present or existing suddenly and completely

synonym : disappear, go away, evaporate

(1) **vanish** into thin air, (2) **vanish** amid the crowd

Two months later, my tumor **vanished** utterly.

wiggle

v. to move or cause to move up and down or from side to side in short and quick movements

synonym : jiggle, squirm, jerk

(1) **wiggle** her lips, (2) **wiggle** with excitement

Her hips **wiggle** as she walks.

complication

n. something that makes a situation or condition that is complex or confused

synonym : confusion, complexity, difficulty

(1) **complication** of structure, (2) resolve without **complication**

He also continued to struggle with serious long-term **complications**.

marvel

n. someone something that causes feelings of wonder or surprise

synonym : wonder, phenomenon, amazement

(1) a **marvel** of beauty, (2) technical **marvel**

The space shuttle is a modern engineering **marvel**.

baroque

adj. of or relating to an ornate and elaborate style of art, architecture, and music that flourished in Europe in the late 16th and early 17th centuries; characterized by a sense of grandeur and drama

synonym : ornate, elaborate, decorative

(1) **baroque** music, (2) **baroque** architecture

The ornate architecture of the palace is a perfect example of the **baroque** style.

extraterrestrial

adj. relating to or existing outside of the Earth's atmosphere or planetary boundaries; pertaining to beings or phenomena that originate from beyond the Earth

synonym : alien, outer, otherworldly

(1) **extraterrestrial** planet, (2) **extraterrestrial** intelligence

Scientists are constantly searching for signs of **extraterrestrial** life in the universe.

Session 2: Spelling

- | | |
|------------------------------|--|
| 1. com_____ion of structure | <i>n.</i> something that makes a situation or condition that is complex or confused |
| 2. antibiotic-resistant g__m | <i>n.</i> a very tiny living that causes the disease; a piece of something such as an organism, concept, etc., capable of growing into a new one or part of one |
| 3. small fl____t | <i>n.</i> a small or individual flower, especially one of the many small flowers making up a composite flower head, such as those found in the daisy or sunflower family |
| 4. va____h into thin air | <i>v.</i> disappear or stop being present or existing suddenly and completely |
| 5. sh____r the plate | <i>v.</i> to break suddenly into many pieces |
| 6. br____us wall | <i>n.</i> (in the plural, "bronchi") either of the two main branches of the trachea that lead to the lungs and distribute air to the bronchioles and alveoli |
| 7. cr__k handle | <i>n.</i> a mechanical device that converts rotary motion into linear motion or vice versa; an eccentric or unpredictable person |
| 8. cau_____er cheese | <i>n.</i> a vegetable that belongs to the same family as broccoli and cabbage, characterized by a compact head of central florets surrounded by green leaves, commonly used in cooking and preparation of various cuisines |

ANSWERS: 1. complication, 2. germ, 3. floret, 4. vanish, 5. shatter, 6. bronchus, 7. crank, 8. cauliflower

9. s__r stone *n.* someone who is believed to have the power of prophecy or foretelling the future; a prophet or fortune-teller
10. talented ph____st *n.* a scientist who specializes in the field of physics
11. a n__b mind *adj.* unable to feel physical sensation and movement; not showing human feeling or sensitivity
12. airway mu__s *n.* a slimy liquid produced inside the nose and other body parts for lubrication, protection, etc.
13. cau____er curry *n.* a vegetable that belongs to the same family as broccoli and cabbage, characterized by a compact head of central florets surrounded by green leaves, commonly used in cooking and preparation of various cuisines
14. company mo__o *n.* a phrase or slogan that expresses a guiding principle or goal
15. resolve without com____ion *n.* something that makes a situation or condition that is complex or confused
16. wi___e with excitement *v.* to move or cause to move up and down or from side to side in short and quick movements
17. va___h amid the crowd *v.* disappear or stop being present or existing suddenly and completely
18. al__e biofuel *n.* A simple plant that grows in or near water and lacks typical leaves and roots
19. passport fo____y *n.* the act of creating a fake or false document, object, or currency to deceive or defraud others; the item that has been created in such a way

ANSWERS: 9. seer, 10. physicist, 11. numb, 12. mucus, 13. cauliflower, 14. motto, 15. complication, 16. wiggle, 17. vanish, 18. algae, 19. forgery

20. ba____e music *adj.* of or relating to an ornate and elaborate style of art, architecture, and music that flourished in Europe in the late 16th and early 17th centuries; characterized by a sense of grandeur and drama
21. technical ma____l *n.* someone something that causes feelings of wonder or surprise
22. express am____nt *n.* a state of great surprise or wonder caused by something extraordinary or unexpected
23. theoretical ph____st *n.* a scientist who specializes in the field of physics
24. a g__m-free environment *n.* a very tiny living that causes the disease; a piece of something such as an organism, concept, etc., capable of growing into a new one or part of one
25. famous s__r *n.* someone who is believed to have the power of prophecy or foretelling the future; a prophet or fortune-teller
26. make ast____ng gains *adj.* surprising or shocking; difficult to believe
27. fo____y scam *n.* the act of creating a fake or false document, object, or currency to deceive or defraud others; the item that has been created in such a way
28. tim____ing project *adj.* requiring a significant amount of time or effort to complete
29. co____ne erosion *n.* the particular shape of the coast (= the shore of a sea or ocean) as seen from the sea

ANSWERS: 20. baroque, 21. marvel, 22. amazement, 23. physicist, 24. germ, 25. seer, 26. astonishing, 27. forgery, 28. time-consuming, 29. coastline

30. ext_____ial planet *adj.* relating to or existing outside of the Earth's atmosphere or planetary boundaries; pertaining to beings or phenomena that originate from beyond the Earth
31. wi___e her lips *v.* to move or cause to move up and down or from side to side in short and quick movements
32. tim_____ing process *adj.* requiring a significant amount of time or effort to complete
33. sh_____r a world record *v.* to break suddenly into many pieces
34. lucky fl___e *n.* a stroke of luck or chance, often resulting in a positive outcome or unexpected success; an accidental or unplanned occurrence
35. a ma___l of beauty *n.* someone something that causes feelings of wonder or surprise
36. dis_____ue a project *v.* to cease or stop doing something; to interrupt or terminate something that is already ongoing or in progress
37. fl___e accident *n.* a stroke of luck or chance, often resulting in a positive outcome or unexpected success; an accidental or unplanned occurrence
38. deeply indented co_____ne *n.* the particular shape of the coast (= the shore of a sea or ocean) as seen from the sea
39. traffic nu_____ce *n.* something or someone that causes annoyance, inconvenience, or discomfort; an unpleasant or irritating thing or person

ANSWERS: 30. extraterrestrial, 31. wiggle, 32. time-consuming, 33. shatter, 34. fluke, 35. marvel, 36. discontinue, 37. fluke, 38. coastline, 39. nuisance

40. colorful fl___t *n.* a small or individual flower, especially one of the many small flowers making up a composite flower head, such as those found in the daisy or sunflower family
41. dis_____ue a service *v.* to cease or stop doing something; to interrupt or terminate something that is already ongoing or in progress
42. cr__k caller *n.* a mechanical device that converts rotary motion into linear motion or vice versa; an eccentric or unpredictable person
43. n__b with cold *adj.* unable to feel physical sensation and movement; not showing human feeling or sensitivity
44. fa_____y of logic *n.* a mistaken belief, idea, or argument that is not supported by facts or evidence; a deceptive or misleading statement or belief
45. the mo__o for safe traffic *n.* a phrase or slogan that expresses a guiding principle or goal
46. computer-con_____ble *adj.* able to be controlled or directed
47. feeling of am_____nt *n.* a state of great surprise or wonder caused by something extraordinary or unexpected
48. ba_____e architecture *adj.* of or relating to an ornate and elaborate style of art, architecture, and music that flourished in Europe in the late 16th and early 17th centuries; characterized by a sense of grandeur and drama

ANSWERS: 40. floret, 41. discontinue, 42. crank, 43. numb, 44. fallacy, 45. motto, 46. controllable, 47. amazement, 48. baroque

49. left br____us *n.* (in the plural, "bronchi") either of the two main branches of the trachea that lead to the lungs and distribute air to the bronchioles and alveoli
50. fr____l art *n.* a complex geometric pattern or shape that repeats itself on smaller and smaller scales, often occurring in nature or mathematical equations
51. ast_____ng achievement *adj.* surprising or shocking; difficult to believe
52. belief in a fa____y *n.* a mistaken belief, idea, or argument that is not supported by facts or evidence; a deceptive or misleading statement or belief
53. sleep reg_____ty *n.* the quality or state of being done often; conformity to a set of rules, standards, or expectations; the state of occurring with a consistent or predictable pattern or frequency
54. nasal mu__s *n.* a slimy liquid produced inside the nose and other body parts for lubrication, protection, etc.
55. ext_____ial intelligence *adj.* relating to or existing outside of the Earth's atmosphere or planetary boundaries; pertaining to beings or phenomena that originate from beyond the Earth
56. prevent ro___t damage *n.* a small, gnawing mammal, such as a mouse, rat, or squirrel, that has sharp incisors and typically has a long, thin tail

ANSWERS: 49. bronchus, 50. fractal, 51. astonishing, 52. fallacy, 53. regularity, 54. mucus, 55. extraterrestrial, 56. rodent

57. ha___n the process *v.* to move or act quickly; to cause or encourage something to happen sooner or more rapidly; to accelerate or speed up
58. fr_____l pattern *n.* a complex geometric pattern or shape that repeats itself on smaller and smaller scales, often occurring in nature or mathematical equations
59. the reg_____ty of his breathing *n.* the quality or state of being done often; conformity to a set of rules, standards, or expectations; the state of occurring with a consistent or predictable pattern or frequency
60. ro___t repellent *n.* a small, gnawing mammal, such as a mouse, rat, or squirrel, that has sharp incisors and typically has a long, thin tail
61. blue al__e *n.* A simple plant that grows in or near water and lacks typical leaves and roots
62. ha___n the arrival *v.* to move or act quickly; to cause or encourage something to happen sooner or more rapidly; to accelerate or speed up
63. con_____ble aircraft *adj.* able to be controlled or directed
64. nu_____ce call *n.* something or someone that causes annoyance, inconvenience, or discomfort; an unpleasant or irritating thing or person

ANSWERS: 57. hasten, 58. fractal, 59. regularity, 60. rodent, 61. algae, 62. hasten, 63. controllable, 64. nuisance

Session 3: Fill in the Blanks

1. _____ has jammed the inlet to the water turbine.
n. A simple plant that grows in or near water and lacks typical leaves and roots

2. The fishing reel had a _____ that made it easy to reel in the catch.
n. a mechanical device that converts rotary motion into linear motion or vice versa; an eccentric or unpredictable person

3. He also continued to struggle with serious long-term _____.
n. something that makes a situation or condition that is complex or confused

4. Scientists are constantly searching for signs of _____ life in the universe.
adj. relating to or existing outside of the Earth's atmosphere or planetary boundaries; pertaining to beings or phenomena that originate from beyond the Earth

5. The new resort was built along the _____ offering stunning ocean views from every room.
n. the particular shape of the coast (= the shore of a sea or ocean) as seen from the sea

6. The magician's disappearing act left the audience in _____.
n. a state of great surprise or wonder caused by something extraordinary or unexpected

7. The ornate architecture of the palace is a perfect example of the _____ style.
adj. of or relating to an ornate and elaborate style of art, architecture, and music that flourished in Europe in the late 16th and early 17th centuries; characterized by a sense of grandeur and drama

ANSWERS: 1. Algae, 2. crank, 3. complications, 4. extraterrestrial, 5. coastline, 6. amazement, 7. baroque

8. Two months later, my tumor _____ utterly.
- v.* disappear or stop being present or existing suddenly and completely
9. The chef garnished the dish with a delicate _____ of broccoli.
- n.* a small or individual flower, especially one of the many small flowers making up a composite flower head, such as those found in the daisy or sunflower family
10. The _____ of his idea came from watching birds flying in flocks.
- n.* a very tiny living that causes the disease; a piece of something such as an organism, concept, etc., capable of growing into a new one or part of one
11. When the body temperature drops, _____ secretion fails.
- n.* a slimy liquid produced inside the nose and other body parts for lubrication, protection, etc.
12. Many people cling to the _____ that they can get rich quickly, despite all evidence.
- n.* a mistaken belief, idea, or argument that is not supported by facts or evidence; a deceptive or misleading statement or belief
13. He set up a trap to catch the _____.
- n.* a small, gnawing mammal, such as a mouse, rat, or squirrel, that has sharp incisors and typically has a long, thin tail
14. The barking dog next door is becoming quite a _____.
- n.* something or someone that causes annoyance, inconvenience, or discomfort; an unpleasant or irritating thing or person
15. The space shuttle is a modern engineering _____.
- n.* someone something that causes feelings of wonder or surprise

ANSWERS: 8. vanished, 9. floret, 10. germ, 11. mucus, 12. fallacy, 13. rodent, 14. nuisance, 15. marvel

16. Her hips _____ as she walks.

- v.* to move or cause to move up and down or from side to side in short and quick movements

17. I love to roast _____ with garlic and olive oil for a healthy side dish.

- n.* a vegetable that belongs to the same family as broccoli and cabbage, characterized by a compact head of central florets surrounded by green leaves, commonly used in cooking and preparation of various cuisines

18. The art museum was forced to close down temporarily due to concerns over _____ in their collection.

- n.* the act of creating a fake or false document, object, or currency to deceive or defraud others; the item that has been created in such a way

19. Einstein was an outstanding and famous _____ of the 20th century.

- n.* a scientist who specializes in the field of physics

20. The news of her sudden death was _____ to everyone who knew her.

- adj.* surprising or shocking; difficult to believe

21. Writing a research paper can be a _____ task.

- adj.* requiring a significant amount of time or effort to complete

22. Winning the lottery was just a _____ I didn't expect it to happen.

- n.* a stroke of luck or chance, often resulting in a positive outcome or unexpected success; an accidental or unplanned occurrence

23. The _____ of exercise is important for maintaining good health.

- n.* the quality or state of being done often; conformity to a set of rules, standards, or expectations; the state of occurring with a consistent or predictable pattern or frequency

ANSWERS: 16. wiggle, 17. cauliflower, 18. forgery, 19. physicist, 20. astonishing, 21. time-consuming, 22. fluke;, 23. regularity

24. The company's _____ is "Innovation and Service," which is reflected in its products and customer support.

n. a phrase or slogan that expresses a guiding principle or goal

25. Her husband's death _____ her life entirely.

v. to break suddenly into many pieces

26. My left arm became _____.

adj. unable to feel physical sensation and movement; not showing human feeling or sensitivity

27. The coastline of Norway is one of the most famous examples of _____ geometry in nature.

n. a complex geometric pattern or shape that repeats itself on smaller and smaller scales, often occurring in nature or mathematical equations

28. I need to _____ my speed to finish the race on time.

v. to move or act quickly; to cause or encourage something to happen sooner or more rapidly; to accelerate or speed up

29. Smoking damages the _____ and increases the risk of lung cancer.

n. (in the plural, "bronchi") either of the two main branches of the trachea that lead to the lungs and distribute air to the bronchioles and alveoli

30. The company has decided to _____ the production of its unpopular product line.

v. to cease or stop doing something; to interrupt or terminate something that is already ongoing or in progress

31. The wise old _____ instructed the young prince to rule his kingdom.

n. someone who is believed to have the power of prophecy or foretelling the future; a prophet or fortune-teller

ANSWERS: 24. motto, 25. shattered, 26. numb, 27. fractal, 28. hasten, 29. bronchus, 30. discontinue, 31. seer

32. The new software is much more _____ and user-friendly.

adj. able to be controlled or directed

ANSWERS: 32. controllable