

跨領域美感教育分區研習

中區場自然科學領域

欣賞自然科學之美

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甚麼是美？

科學上，企圖從下列因素探討"美"的定義：

美與大腦：大腦各區反應

美與心理：偏向與喜好

人臉：面貌的美醜判斷

藝術：舞蹈、繪畫、攝影、雕塑、服裝、設計

音樂：古典、民謠、流行

個人因素：薪資、人際關係

社會影響：政治人物、流行文化、語言

關於為何人們對於某些事物會認為它是美的，仍未有結論。



Christina Aguilera

克莉絲汀·瑪莉亞·阿奎萊拉（英語：**Christina Maria Aguilera**；1980年12月18日－），世界著名美國流行女歌手、作曲人、作詞人、女演員、舞蹈員及慈善家。是一位坐擁六座葛萊美獎和八首冠軍單曲的超級巨星。克莉絲汀在主唱迪士尼卡通電影花木蘭的主題曲《心湖倒影》後和唱片公司**RCA Records**簽約，憑藉首張同名專輯克莉絲汀·阿奎萊拉的渾厚嗓音和亮麗外表走紅。專輯在美國售出超過1000萬張並以新人之姿獲得三首冠軍單曲包括"瓶中精靈"、"What A Girl Wants（英語：**What A Girl Wants**）"、"Come On Over Baby（英語：**Come On Over Baby**）"。因能歌善舞及創作才華，首張專輯便贏得葛萊美獎最佳新人頭銜。克莉絲汀憑個人首支單曲"**Genie In A Bottle**"便火速走紅且早期形象清純甜美，華語地區傳媒因而暱稱克莉絲汀為瓶中精靈。

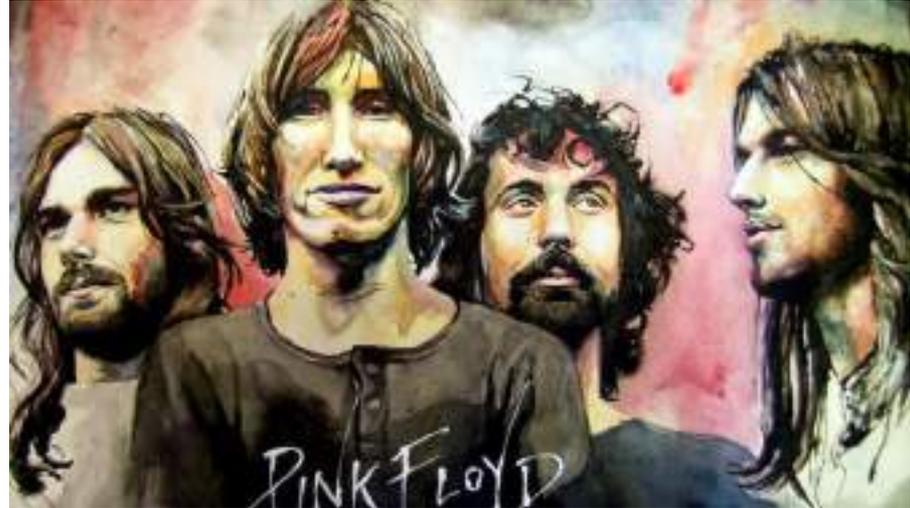




PINK FLOYD
MEDLEY MIX 1970-2014

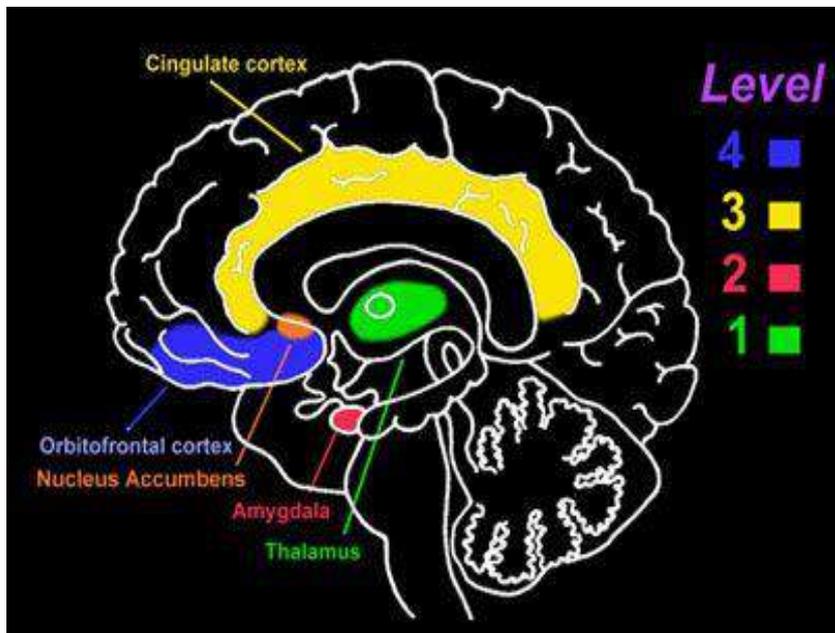
Pink Floyd

平克·佛洛伊德（英語：）是英國搖滾樂團，他們最初以迷幻與太空搖滾音樂贏得知名度，而後逐漸發展為前衛搖滾音樂。平克·佛洛伊德以哲學的歌詞、音速實驗、創新的專輯封面藝術與精緻的現場表演聞名。他們名列最成功的搖滾樂團之一，並在全球坐擁超過二億的唱片銷售量，其中美國就包辦了7450萬。作為搖滾史上最偉大的樂隊之一，影響了當時及後面包括現在一大批著名樂隊，這些樂隊就包括著名的創世紀合唱團、Yes等樂隊，在全球也是知名度最高的樂隊之一；作為英倫音樂入侵時期的中堅力量，Pink Floyd、Jeff Beck、Rolling stone、The Who、Beatles、Led Zeppelin 等等都成為了英國的國寶。

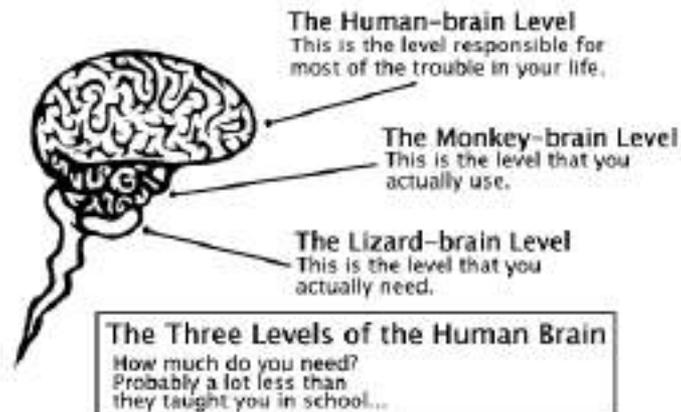


美的層次

美是由大腦理解而產生，因此產生了層次的差別



	Reactive	Deliberative	Reflective
Function	Ensure survival	Interact & gain action	Evaluate & assign meaning
Processing Level	Subconscious	Semiconscious (not fully conscious)	Conscious
Processing Mechanism	Pattern matching & prediction	Self-remembering and patterned responses	Creative problem solving
Processing Bases	Basic drives modulated by experiential temperament	Sensations, beliefs, principles, mistakes	Mind reading, social norms, dissonance-reduction
Outcomes	Automatic behavior and emotional reactions	Self-assessed behavior	Provide reasons, express "self," novel behavior



BRAIN HIERARCHY

FRONTAL LOBE

- *Abstract Thinking
- *Problem Solving
- *Reasoning
- *Executive Functioning
- *Organizing
- *Motor Functions
- *Regulates Emotions
- *Expressive language

FUNCTIONS

- *Organizes thoughts on paper
- *Remembers facts from teacher
- *Starts and completes tasks
- *Tells stories

TEMPORAL LOBE

- *Speech
- *Auditory Processing
- *Hearing
- *Behavior
- *Emotions
- *Short-Term memory
- *Long-term memory

FUNCTIONS

- *Processes what the teacher teaches
- *Fear
- *Fight or Flight
- *Retains Facts

FRONTAL
LOBE

TEMPORAL
LOBE

PARIETAL
LOBE

SPINAL CORD

CEREBELLUM

OCCIPITAL
LOBE

PARIETAL LOBE

- *Sensory Information

FUNCTIONS

- *Taste
- *Touch
- *Smell
- *Temperature

OCCIPITAL LOBE

- *Visual System
- *Visual Information

FUNCTIONS

- *Processes words on a page
- *Knows shapes and sizes
- *Recognizes letters
- *Knows left from right

CEREBELLUM

- *Balance
- *Coordination
- *Attention
- *Rhythm
- *Proprioception
- *Vestibular

FUNCTIONS

- *Kick a ball
- *Throw a ball
- *Jump on one foot
- *Ride a bike



INTEGRATED
Learning Strategies

MAN AS A "TRIUNE BEING"



Imagination
Conscience
Affection
Reasoning
Memory

SPIRIT

- ▶ Intelligence
- ▶ Mind
- ▶ Brain

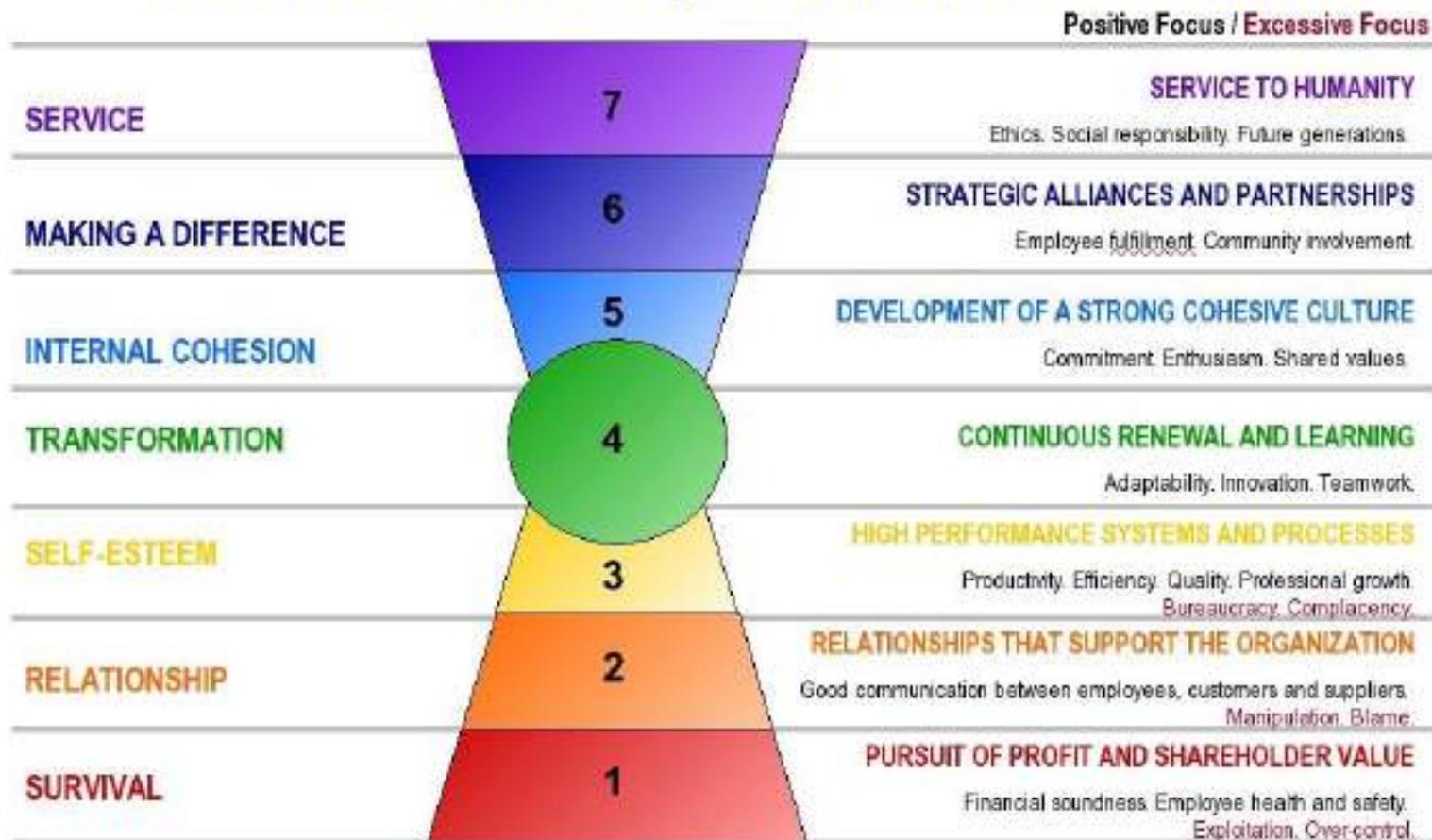
SOUL

- ▶ The Control Tower
- ▶ The Real "You"
- ▶ Predestinated Seed dwells in the Heart
- ▶ Temple of the HOLY GHOST
- ▶ Sixth Sense: Faith
- ▶ Eternal Life (Zoe)
- ▶ Saved & Redeemed By the Blood of Jesus Christ

BODY

FIVE SENSES to contact the earth
▶ See, Hear, Taste, Feel, Smell

Seven Levels of Organizational Consciousness



感官之美



感官之美



感性之美



知覺感受之美

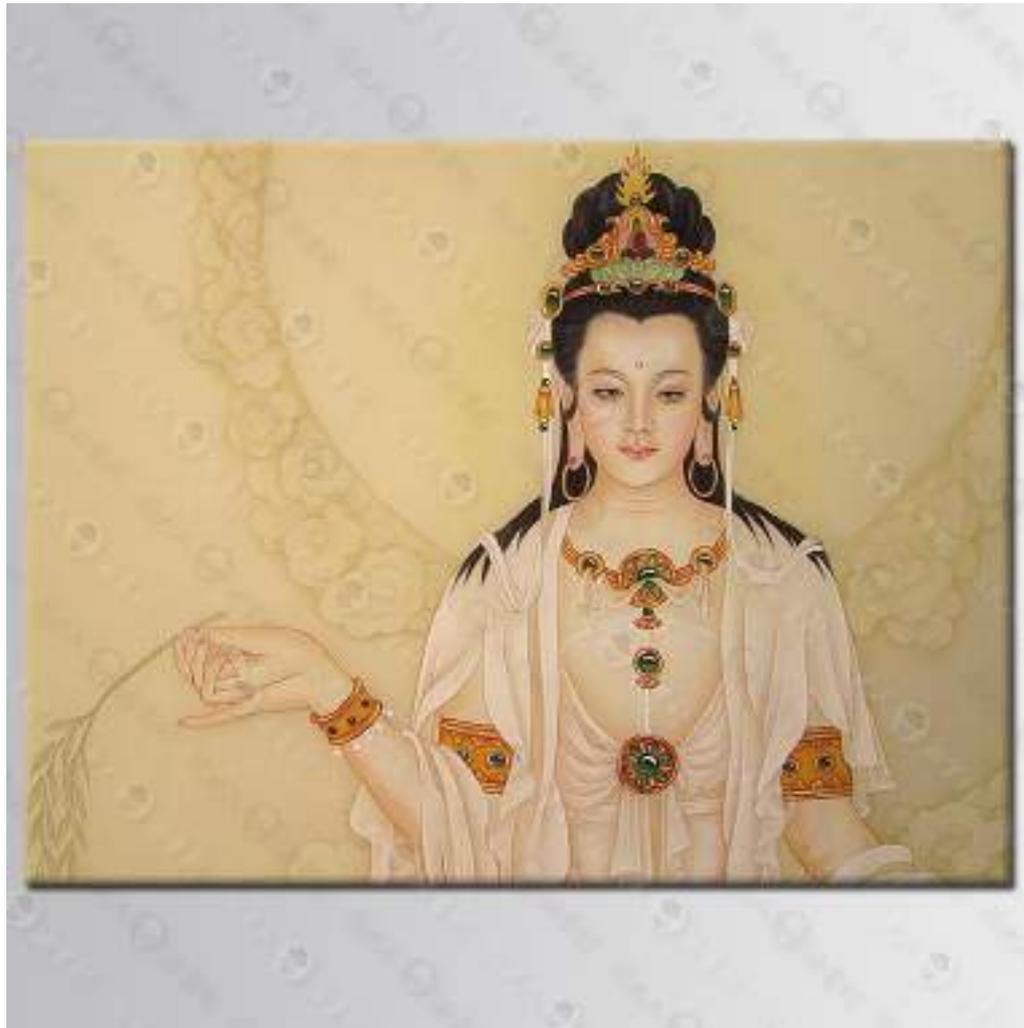


靈性或意識層次之美



宗教層次之美





科學發現之美

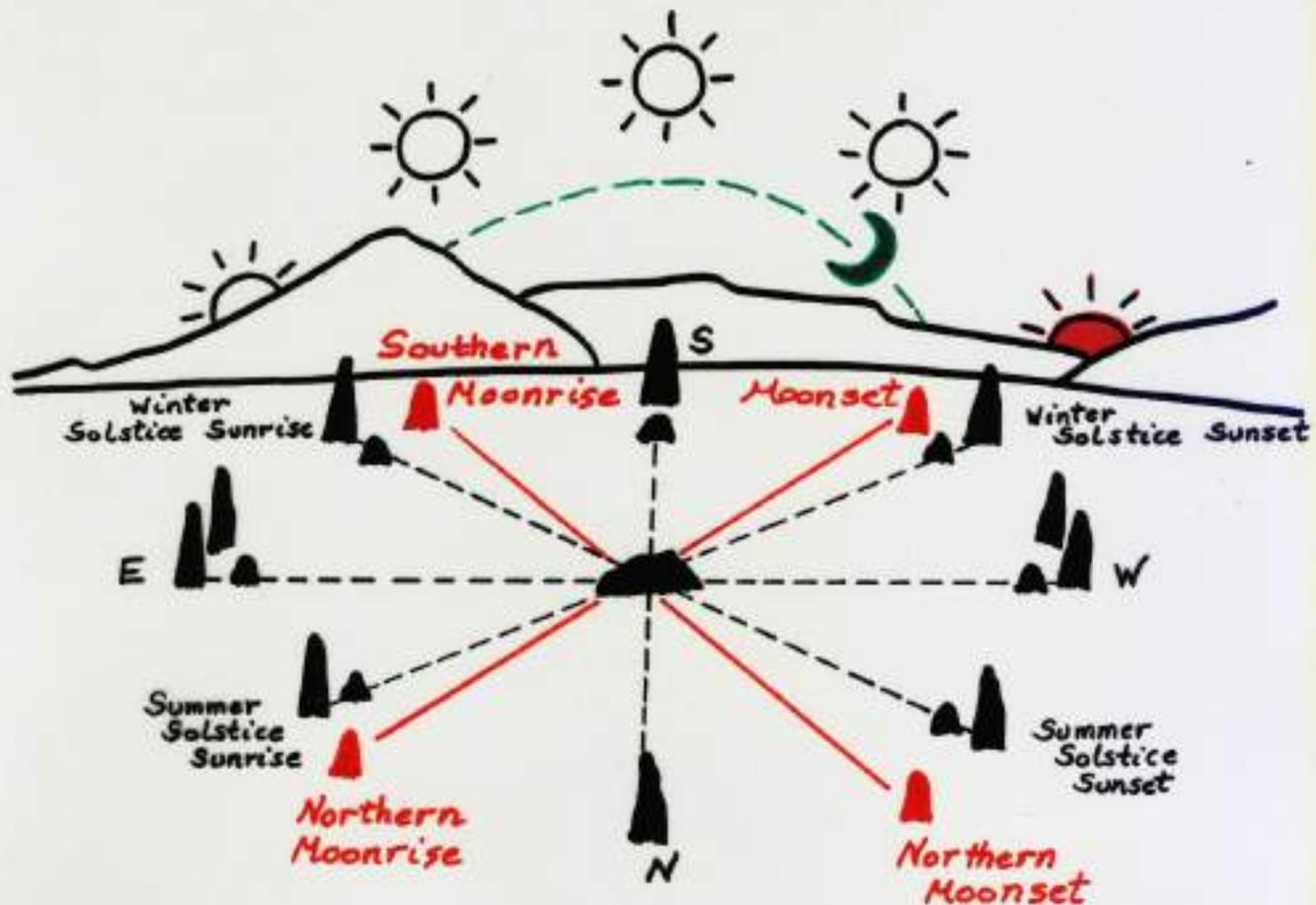


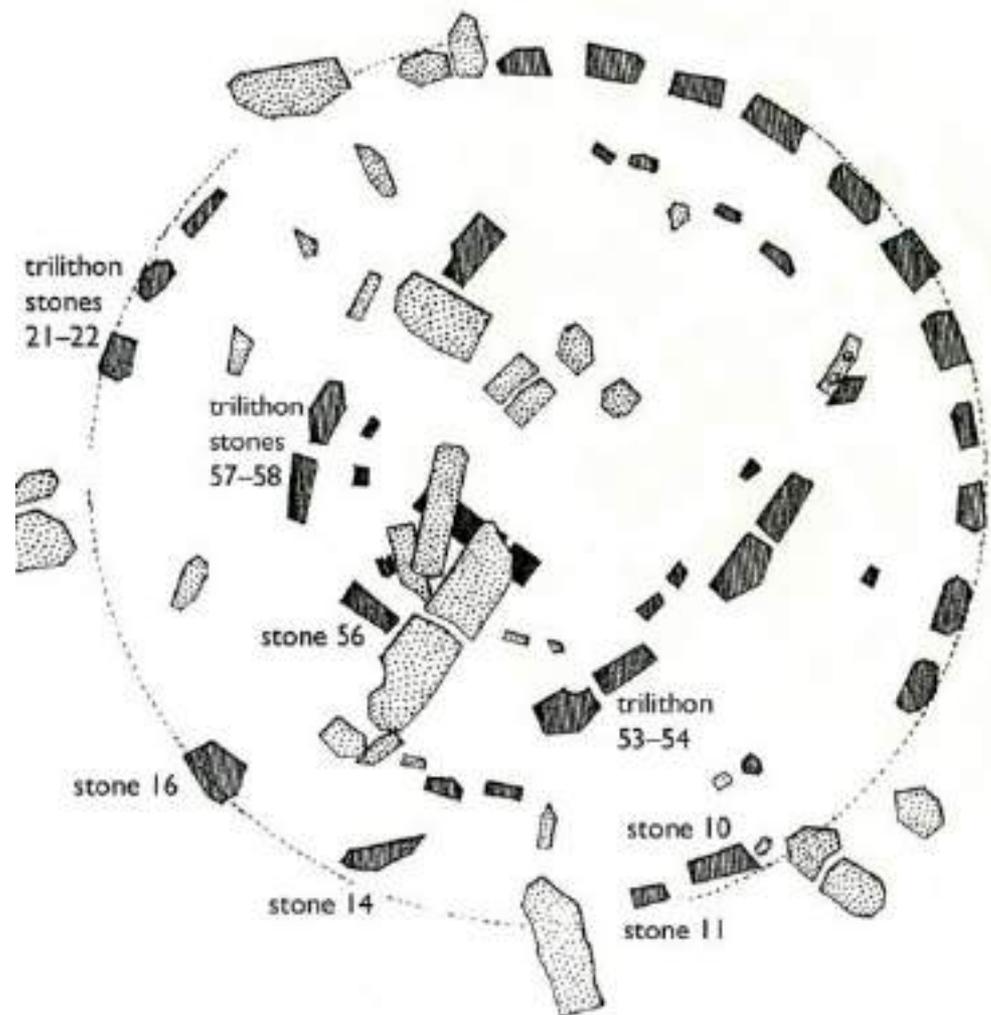




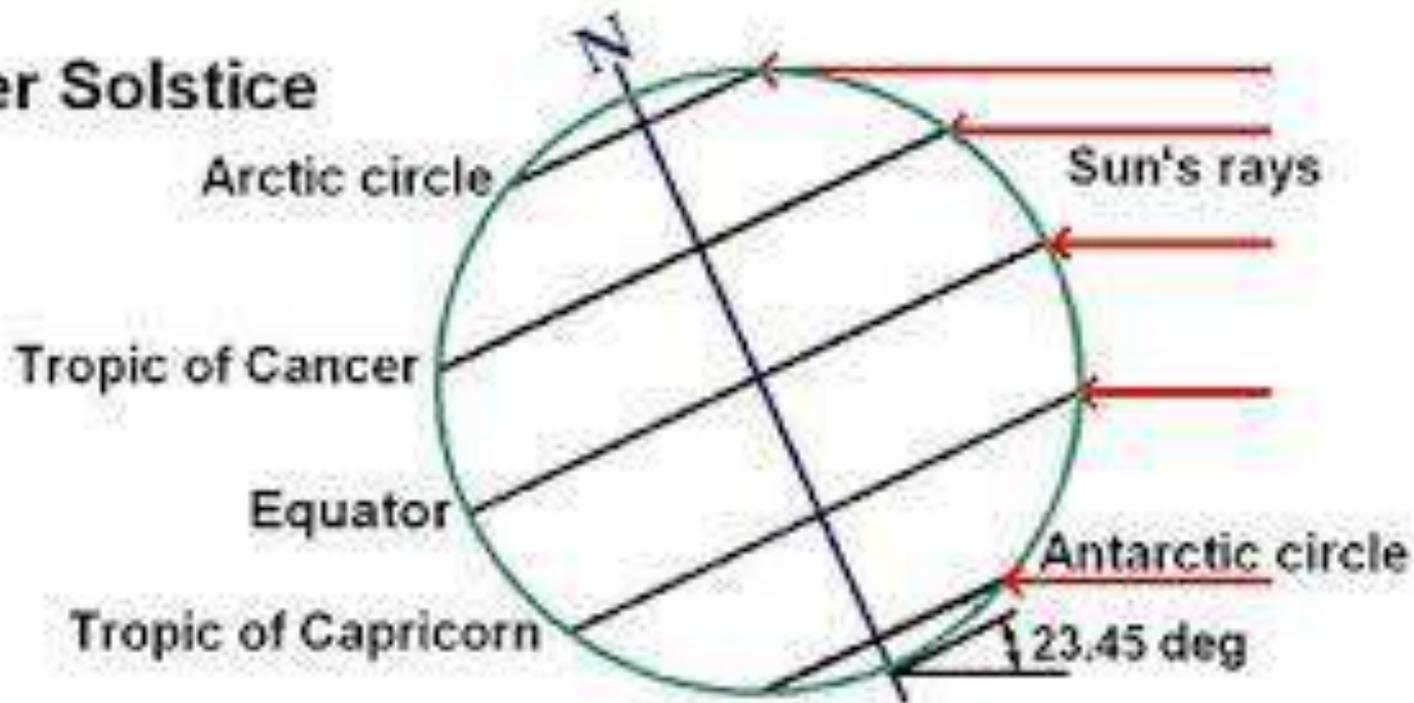


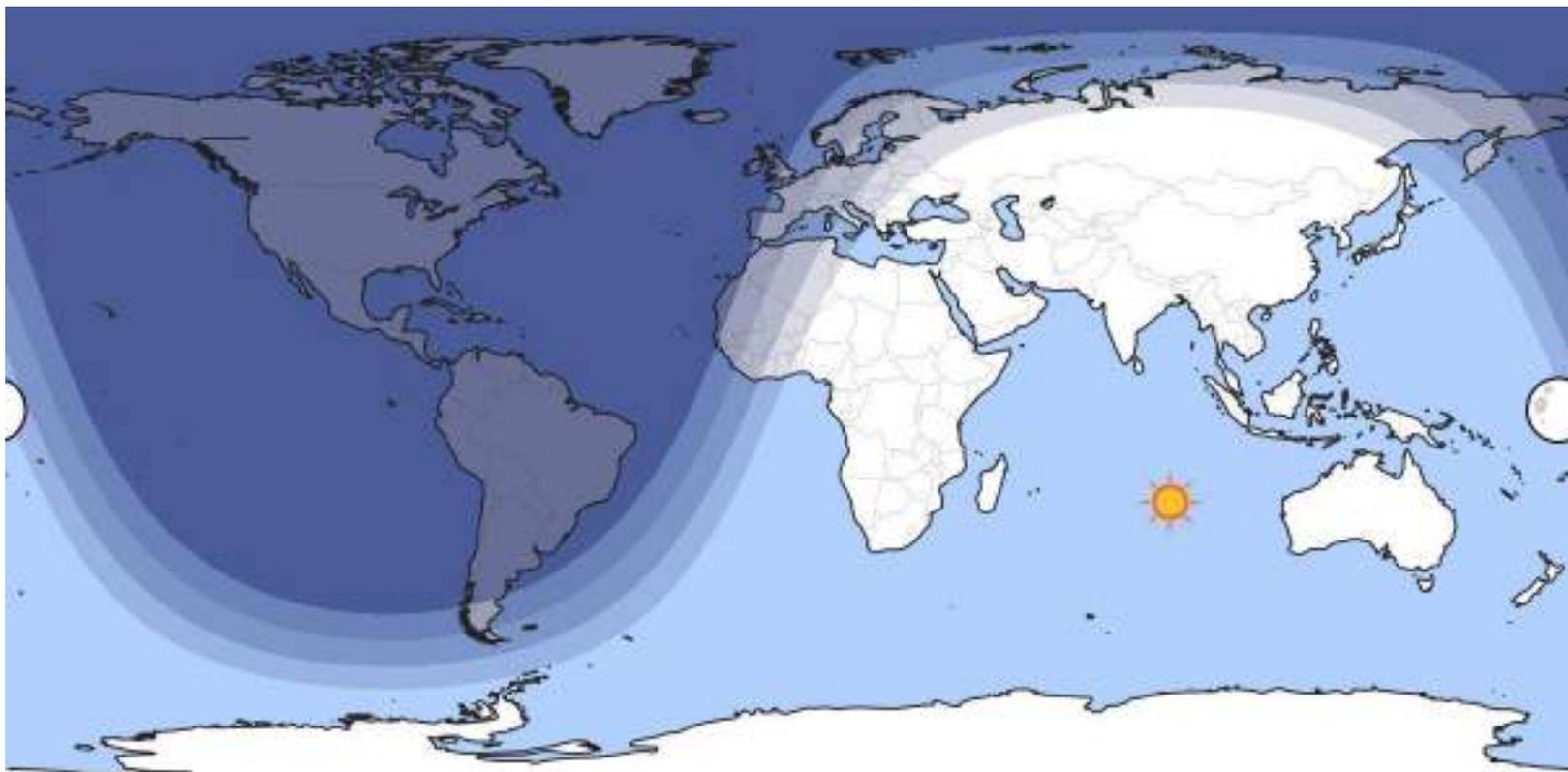
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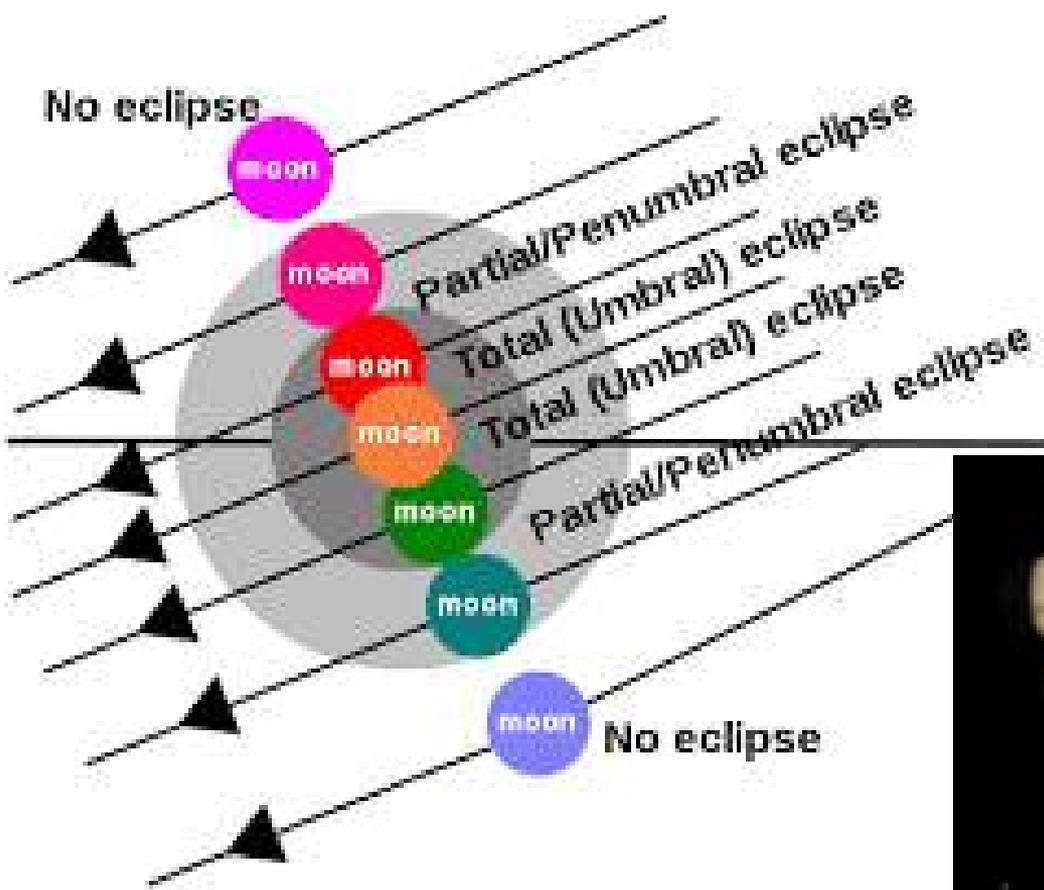




Winter Solstice

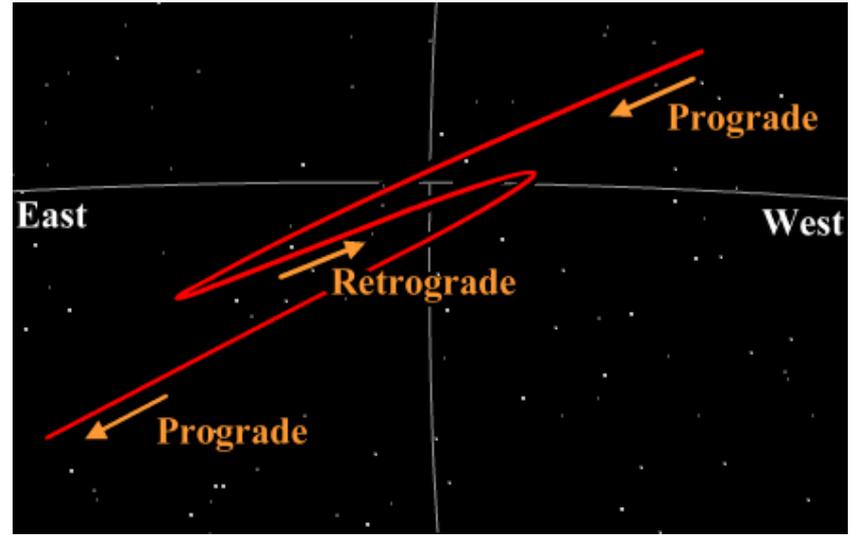
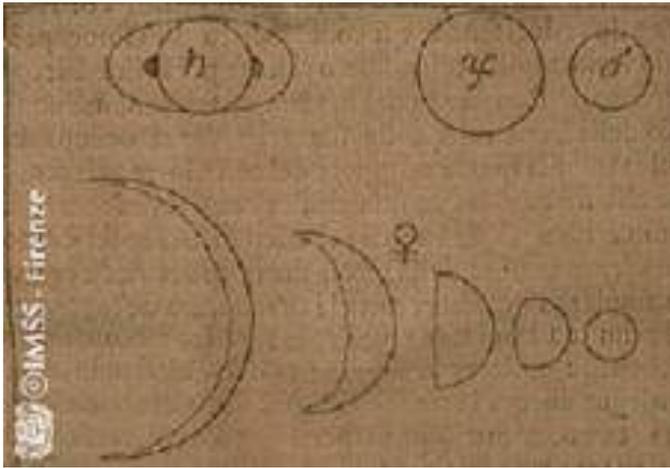
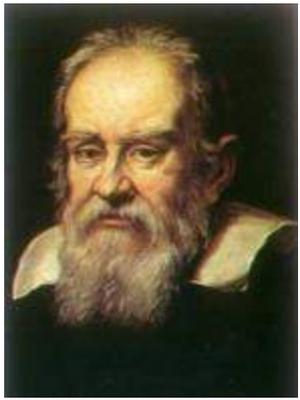


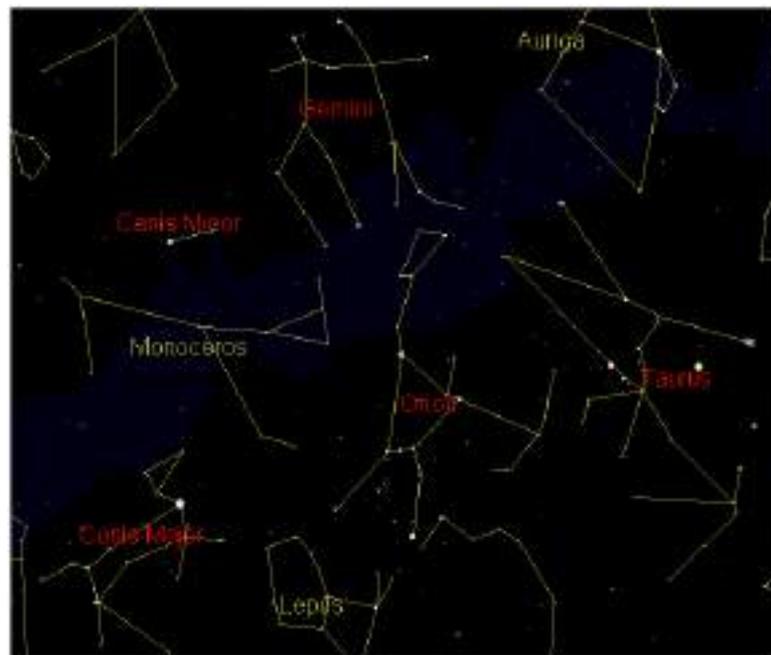
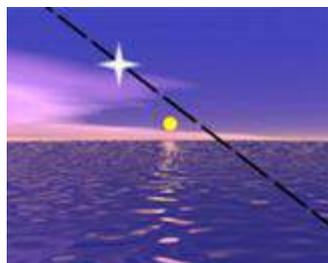
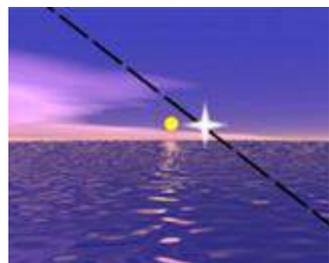
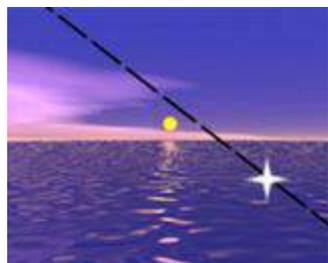
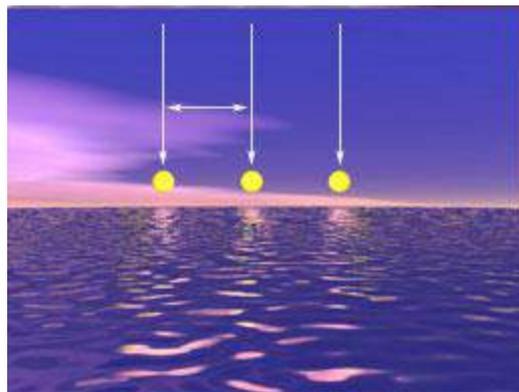




Descending node lunar eclipse paths







Periodic Table of the Elements

Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	1A	2A	3B	4B	5B	6B	7B	8B			1B	2B	3A	4A	5A	6A	7A	8A
1	1 H Hydrogen 1.0078																	2 He Helium 4.0026
2	3 Li Lithium 6.938	4 Be Beryllium 9.0122											5 B Boron 10.806	6 C Carbon 12.009	7 N Nitrogen 14.006	8 O Oxygen 15.999	9 F Fluorine 18.998	10 Ne Neon 20.180
3	11 Na Sodium 22.990	12 Mg Magnesium 24.305											13 Al Aluminum 26.982	14 Si Silicon 28.084	15 P Phosphorus 30.974	16 S Sulfur 32.059	17 Cl Chlorine 35.446	18 Ar Argon 39.948
4	19 K Potassium 39.098	20 Ca Calcium 40.078	21 Sc Scandium 44.956	22 Ti Titanium 47.867	23 V Vanadium 50.942	24 Cr Chromium 51.996	25 Mn Manganese 54.938	26 Fe Iron 55.845	27 Co Cobalt 58.933	28 Ni Nickel 58.693	29 Cu Copper 63.546	30 Zn Zinc 65.38	31 Ga Gallium 69.723	32 Ge Germanium 72.63	33 As Arsenic 74.922	34 Se Selenium 78.96	35 Br Bromine 79.904	36 Kr Krypton 83.798
5	37 Rb Rubidium 85.468	38 Sr Strontium 87.62	39 Y Yttrium 88.906	40 Zr Zirconium 91.224	41 Nb Niobium 92.906	42 Mo Molybdenum 95.96	43 Tc Technetium 98.9062	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.91	46 Pd Palladium 106.42	47 Ag Silver 107.87	48 Cd Cadmium 112.41	49 In Indium 114.82	50 Sn Tin 118.71	51 Sb Antimony 121.76	52 Te Tellurium 127.60	53 I Iodine 126.90	54 Xe Xenon 131.29
6	55 Cs Cesium 132.91	56 Ba Barium 137.33		72 Hf Hafnium 178.49	73 Ta Tantalum 180.95	74 W Tungsten 183.84	75 Re Rhenium 186.21	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.97	80 Hg Mercury 200.59	81 Tl Thallium 204.38	82 Pb Lead 207.2	83 Bi Bismuth 208.98	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
7	87 Fr Francium (223)	88 Ra Radium (226)		104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (266)	107 Bh Bohrium (264)	108 Hs Hassium (269)	109 Mt Meitnerium (268)	110 Ds Darmstadtium (268)	111 Rg Roentgenium (268)	112 Cn Copernicium (268)	113 Uut Ununtrium (268)	114 Fl Flerovium (268)	115 Uup Ununpentium (268)	116 Lv Livermorium (268)	117 Uus Ununseptium (268)	118 Uuo Ununoctium (268)
			Lanthanides	57 La Lanthanum 138.91	58 Ce Cerium 140.12	59 Pr Praseodymium 140.91	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.96	64 Gd Gadolinium 157.25	65 Tb Terbium 158.93	66 Dy Dysprosium 162.50	67 Ho Holmium 164.93	68 Er Erbium 167.26	69 Tm Thulium 168.93	70 Yb Ytterbium 173.04	71 Lu Lutetium 174.97
			Actinides	89 Ac Actinium (227)	90 Th Thorium 232.04	91 Pa Protactinium 231.04	92 U Uranium 238.03	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (262)

11 — Atomic number
Na — Element symbol
Sodium — Element name
22.990 — Atomic weight

- Alkali metals
- Alkaline earth metals
- Lanthanides
- Actinides
- Transition metals
- Unknown properties
- Post-transition metals
- Metalloids
- Other nonmetals
- Halogens
- Noble gases

維基百科

性質

軌域

同位素

Compounds

重量

名稱

電子

寬

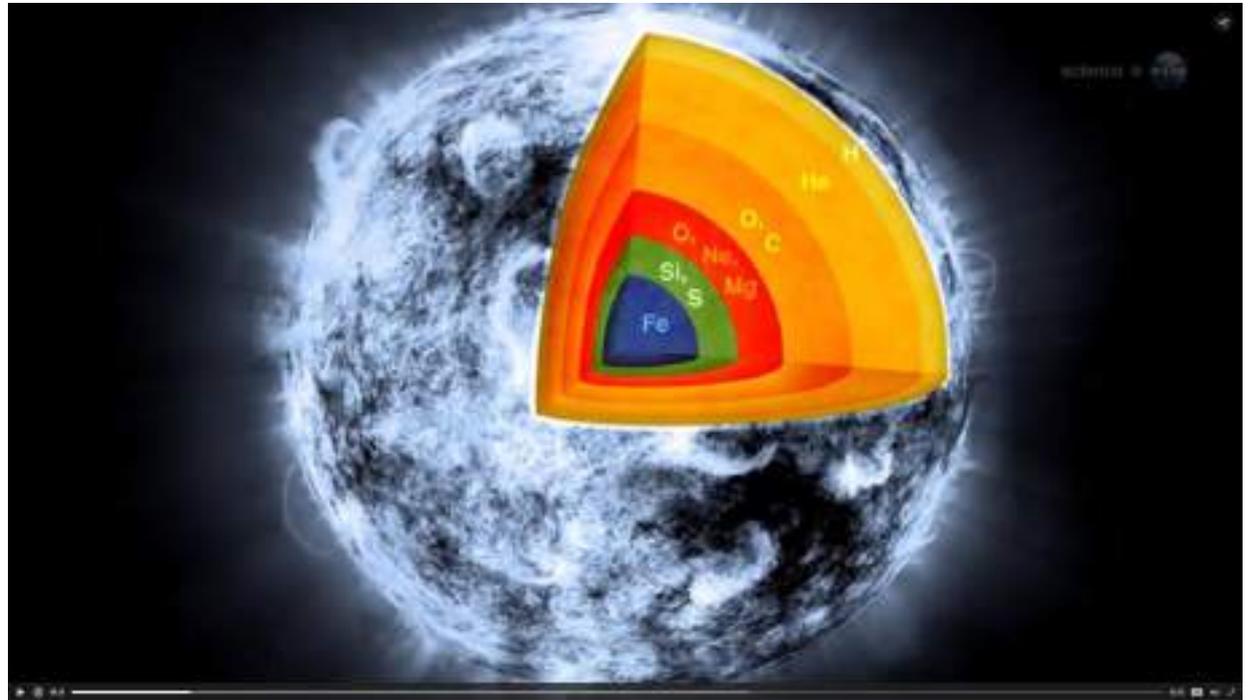
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18				
													Pnictogens		Chalcogens		鹼土				
1 氫 Hydrogen 1.008	2 鎳 Lithium 6.94	3 鈉 Sodium 22.990	4 鈹 Beryllium 9.0122													5 硼 Boron 10.81	6 碳 Carbon 12.011	7 氮 Nitrogen 14.007	8 氧 Oxygen 15.999	9 氟 Fluorine 18.998	10 氖 Neon 20.180
												13 鋁 Aluminium 26.982	14 矽 Silicon 28.085	15 磷 Phosphorus 30.974	16 硫 Sulfur 32.06	17 氯 Chlorine 35.45	18 氬 Argon 39.948				
19 鉀 Potassium 39.098	20 鈣 Calcium 40.078	21 鈾 Scandium 44.956	22 鈦 Titanium 47.867	23 鈮 Vanadium 50.942	24 鉻 Chromium 51.996	25 錳 Manganese 54.938	26 鐵 Iron 55.845	27 鈷 Cobalt 58.933	28 鎳 Nickel 58.693	29 銅 Copper 63.546	30 鋅 Zinc 65.38	31 鋁 Gallium 69.723	32 銻 Germanium 72.630	33 砷 Arsenic 74.922	34 硒 Selenium 78.971	35 溴 Bromine 79.904	36 氙 Krypton 83.798				
37 銣 Rubidium 85.468	38 銻 Strontium 87.62	39 鈾 Yttrium 88.906	40 鋯 Zirconium 91.224	41 鈮 Niobium 92.906	42 鉬 Molybdenum 95.95	43 錳 Technetium (98)	44 鈷 Ruthenium 101.07	45 鈷 Rhodium 102.91	46 鈷 Palladium 106.42	47 銀 Silver 107.87	48 鎘 Cadmium 112.41	49 銦 Indium 114.82	50 錫 Tin 118.71	51 銻 Antimony 121.76	52 碲 Tellurium 127.60	53 碘 Iodine 126.90	54 氙 Xenon 131.29				
55 銣 Caesium 132.91	56 銣 Barium 137.33	57-71		72 鈳 Hafnium 178.49	73 鉭 Tantalum 180.95	74 鎢 Tungsten 183.84	75 錳 Rhenium 186.21	76 銻 Osmium 192.22	77 銻 Iridium 192.22	78 鉑 Platinum 195.08	79 金 Gold 196.97	80 汞 Mercury 200.59	81 鉍 Thallium 204.38	82 鉛 Lead 207.2	83 鉍 Bismuth 208.98	84 鉍 Polonium (209)	85 砹 Astatine (210)	86 氡 Radon (222)			
87 釷 Francium (223)	88 釷 Radium (226)	89-103		104 釷 Rutherfordium (267)	105 釷 Dubnium (268)	106 釷 Seaborgium (269)	107 釷 Bohrium (270)	108 釷 Hassium (277)	109 釷 Meitnerium (278)	110 釷 Darmstadtium (281)	111 釷 Roentgenium (282)	112 釷 Copernicium (285)	113 釷 Nihonium (286)	114 釷 Flerovium (289)	115 釷 Moscovium (290)	116 釷 Livermorium (293)	117 釷 Tennessine (294)	118 釷 Oganesson (294)			

對沒有穩定同位素的元素，其同位素中半衰期最長的數目在括號中標示出來。

元素週期表 設計及界面版權 © 1997 Michael Dayah Ptable.com 上一次更新 2017年6月16日

57 釷 Lanthanum 138.91	58 釷 Cerium 140.12	59 釷 Praseodym 140.91	60 釷 Neodymium 144.24	61 釷 Promethium (145)	62 釷 Samarium 151.96	63 釷 Europium 151.96	64 釷 Gadolinium 157.25	65 釷 Terbium 158.93	66 釷 Dysprosium 162.50	67 釷 Holmium 164.93	68 釷 Erbium 167.26	69 釷 Thulium 168.93	70 釷 Ytterbium 173.05	71 釷 Lutetium 174.97
89 釷 Actinium (227)	90 釷 Thorium 232.04	91 釷 Protactinium 231.04	92 釷 Uranium 238.03	93 釷 Neptunium (237)	94 釷 Plutonium (244)	95 釷 Americium (243)	96 釷 Curium (247)	97 釷 Berkelium (247)	98 釷 Californium (251)	99 釷 Einsteinium (252)	100 釷 Fermium (257)	101 釷 Mendelevium (258)	102 釷 Nobelium (259)	103 釷 Lawrencium (266)

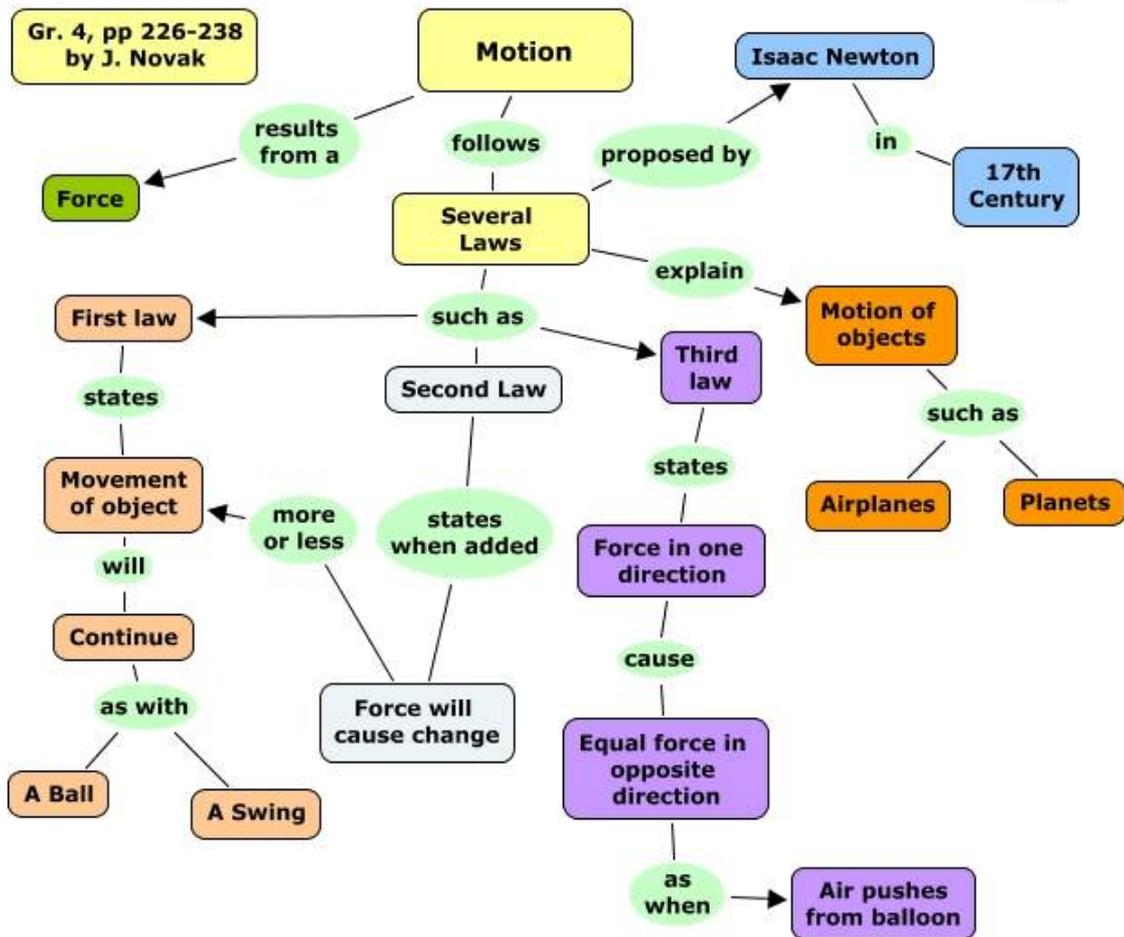


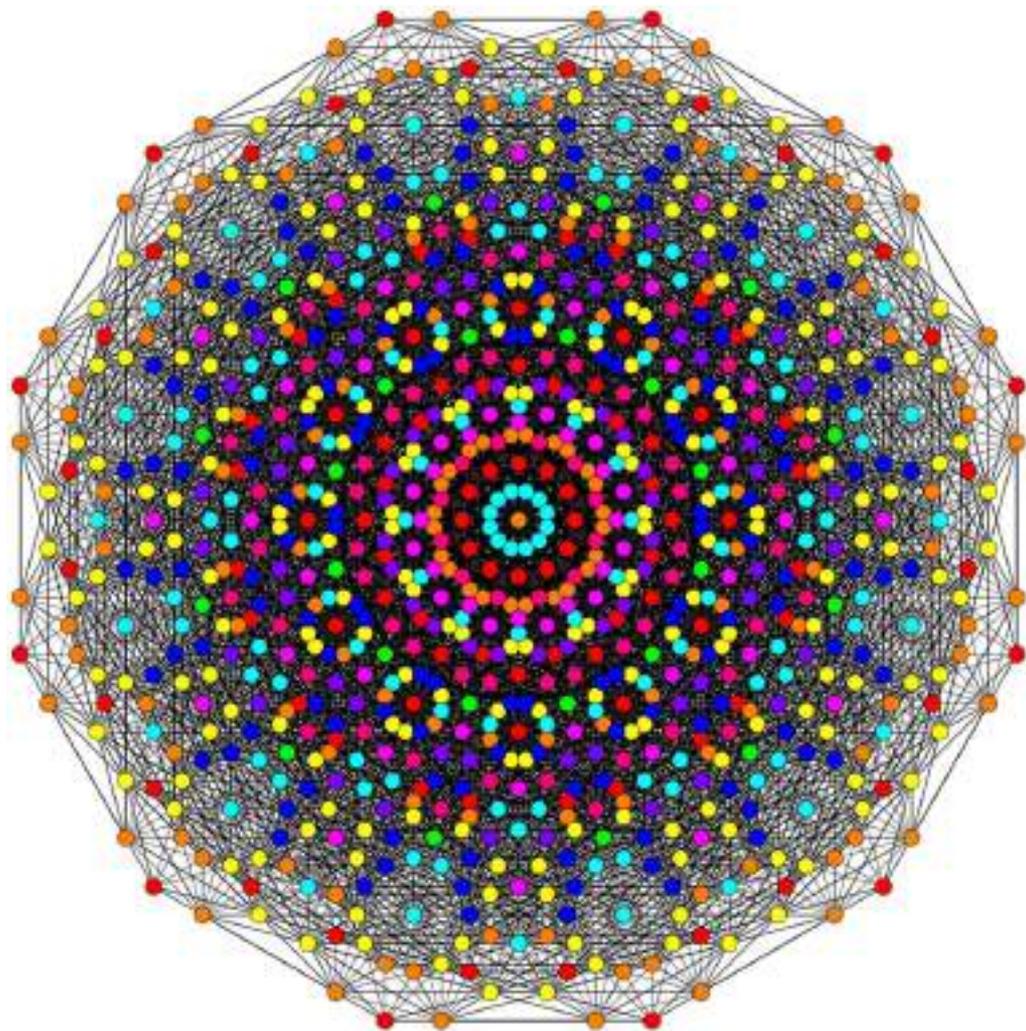


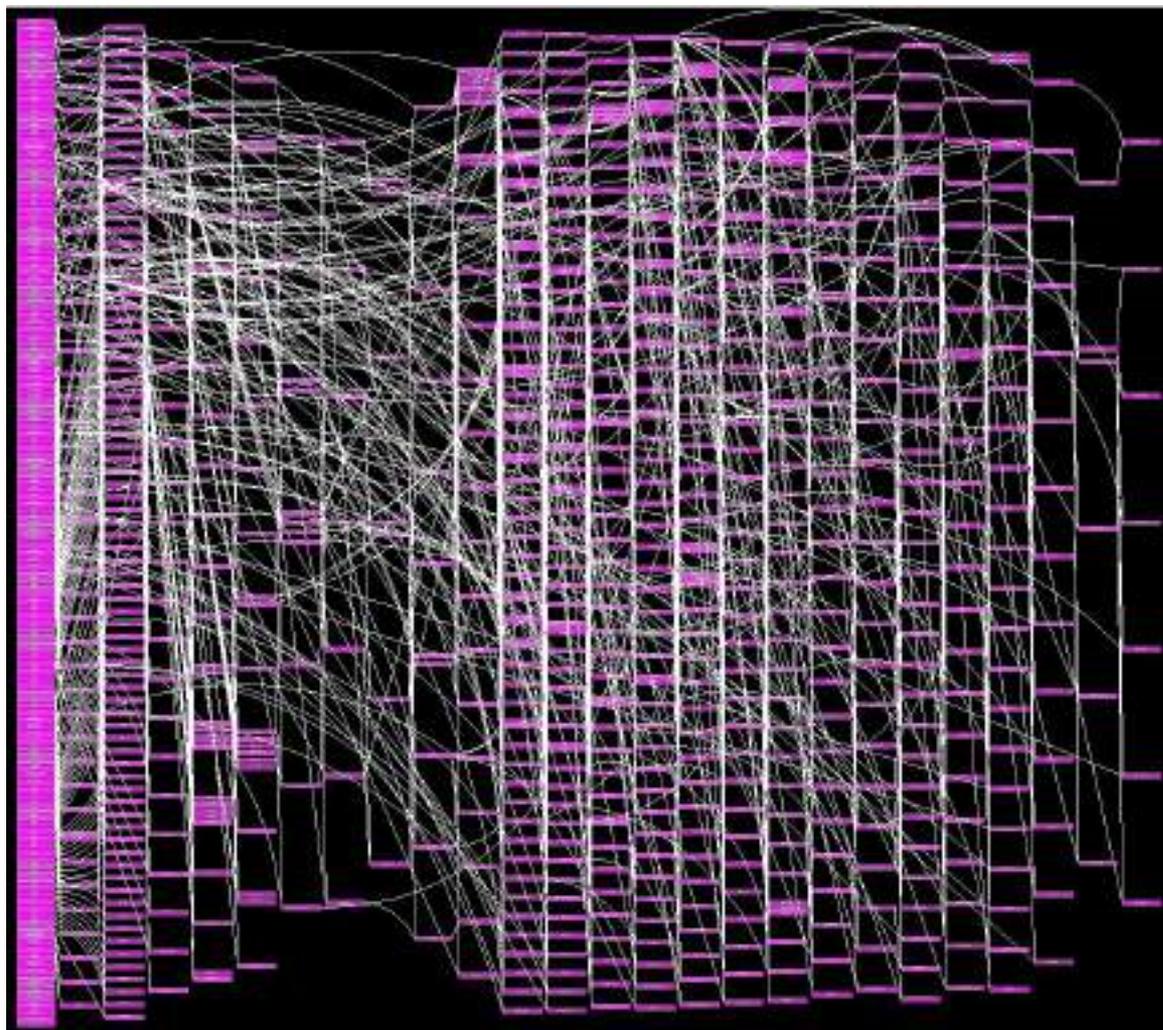
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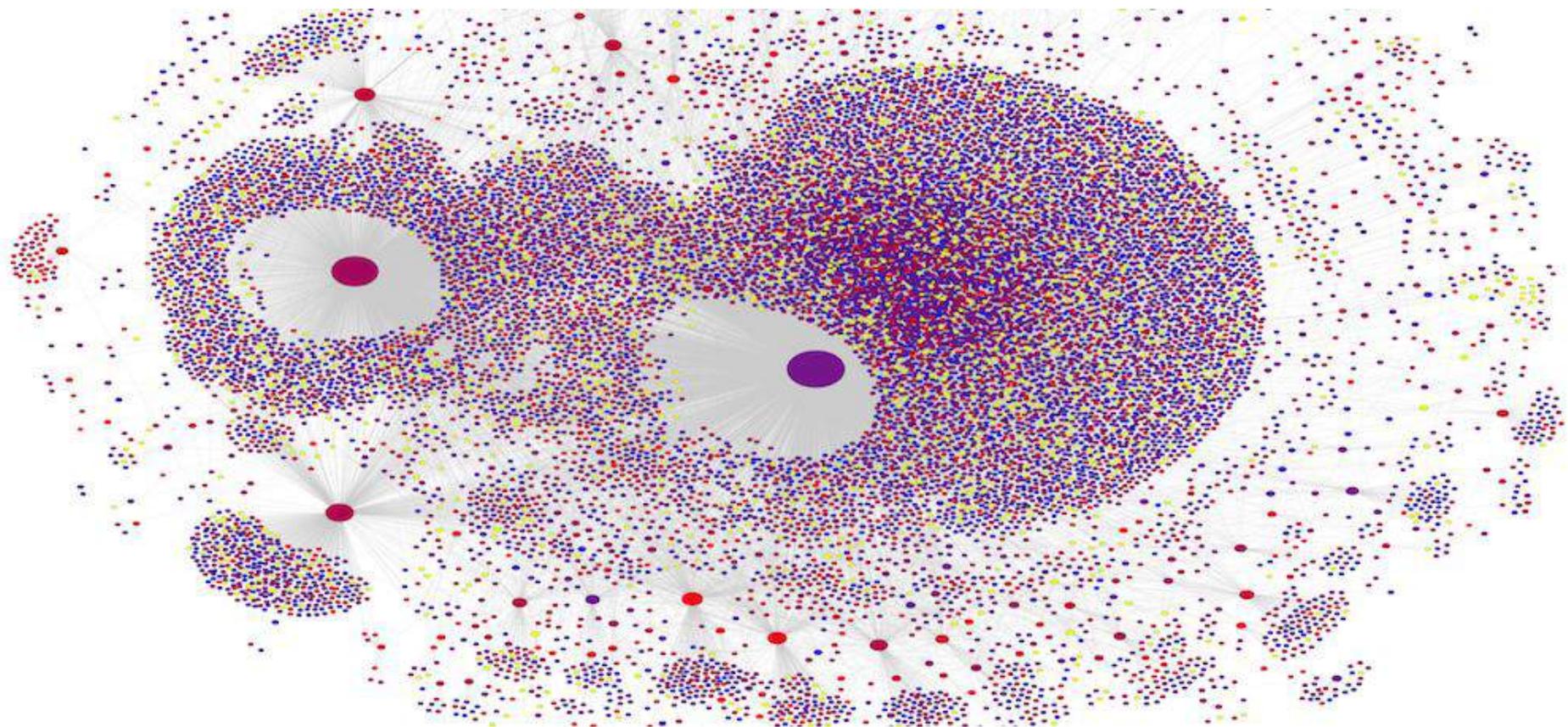
Focus Question: What are Newton's laws of motion?

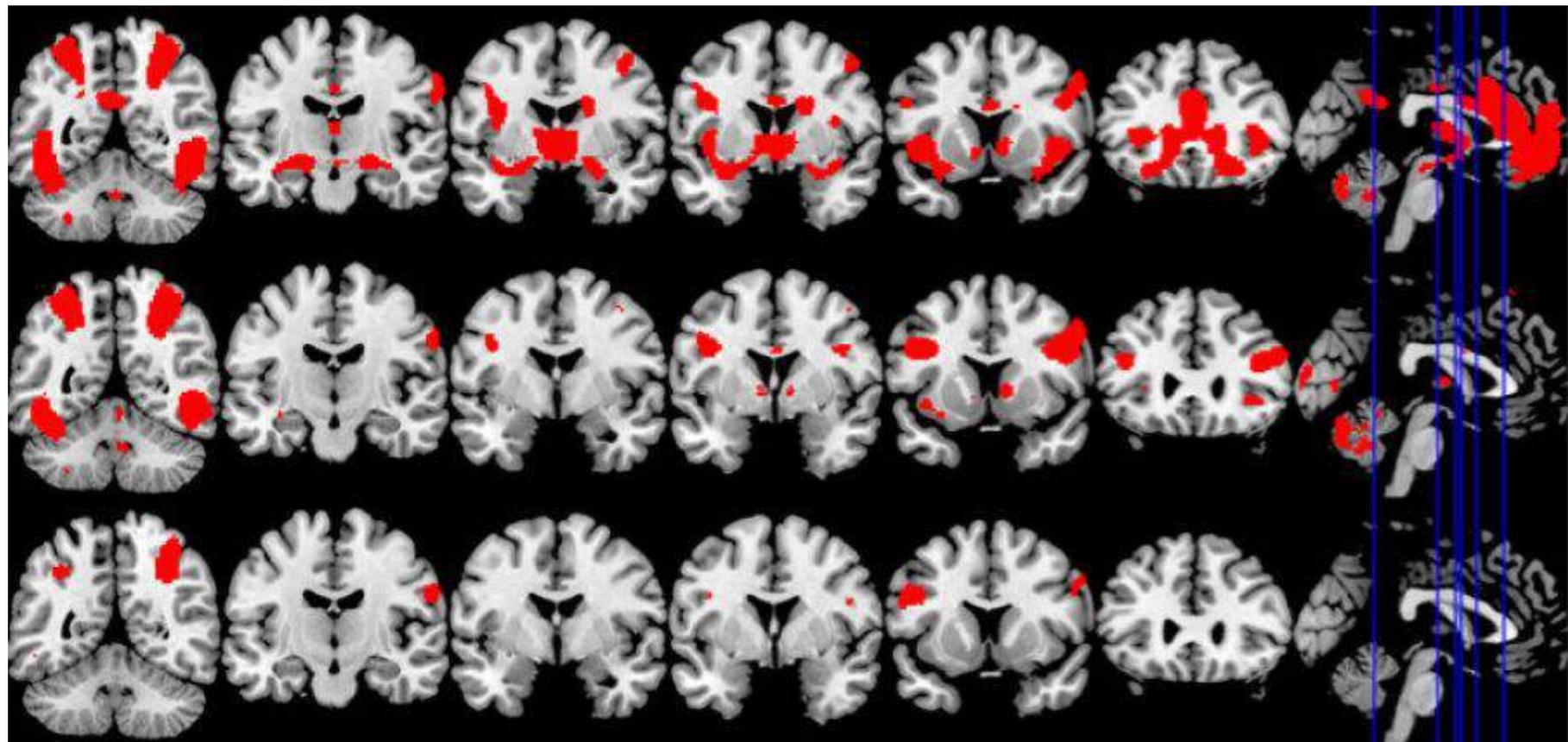
Gr. 4, pp 226-238
by J. Novak

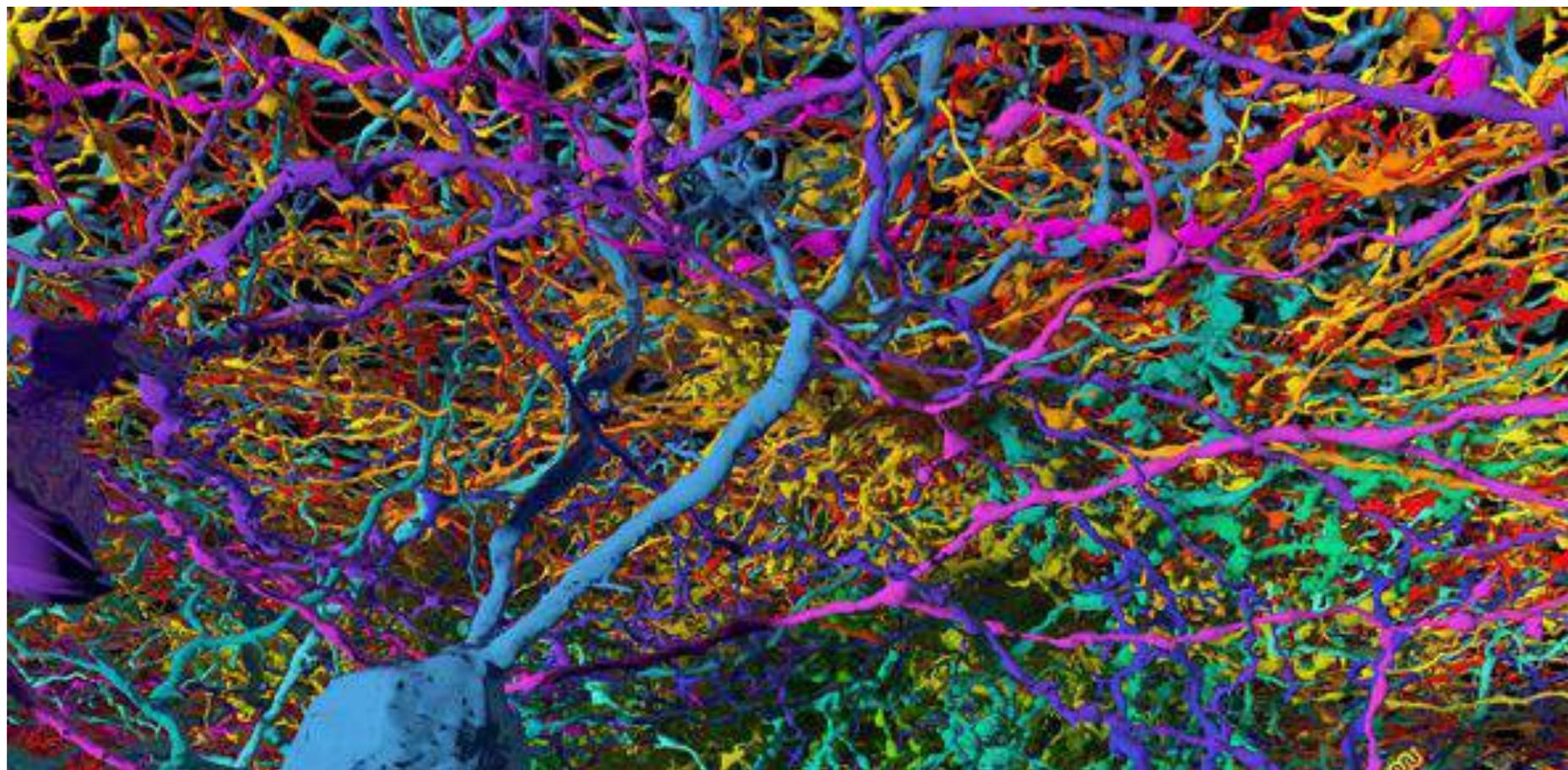






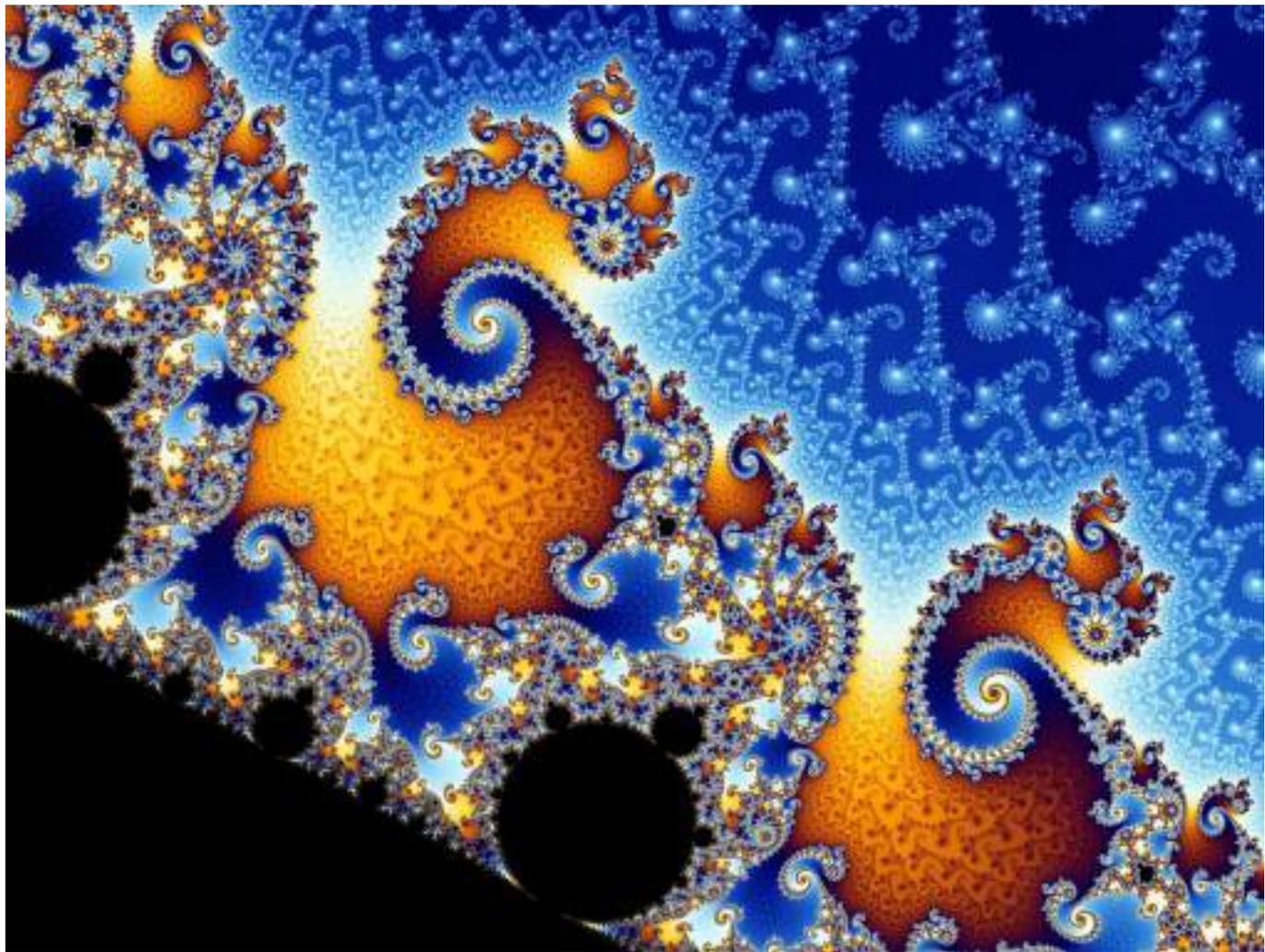


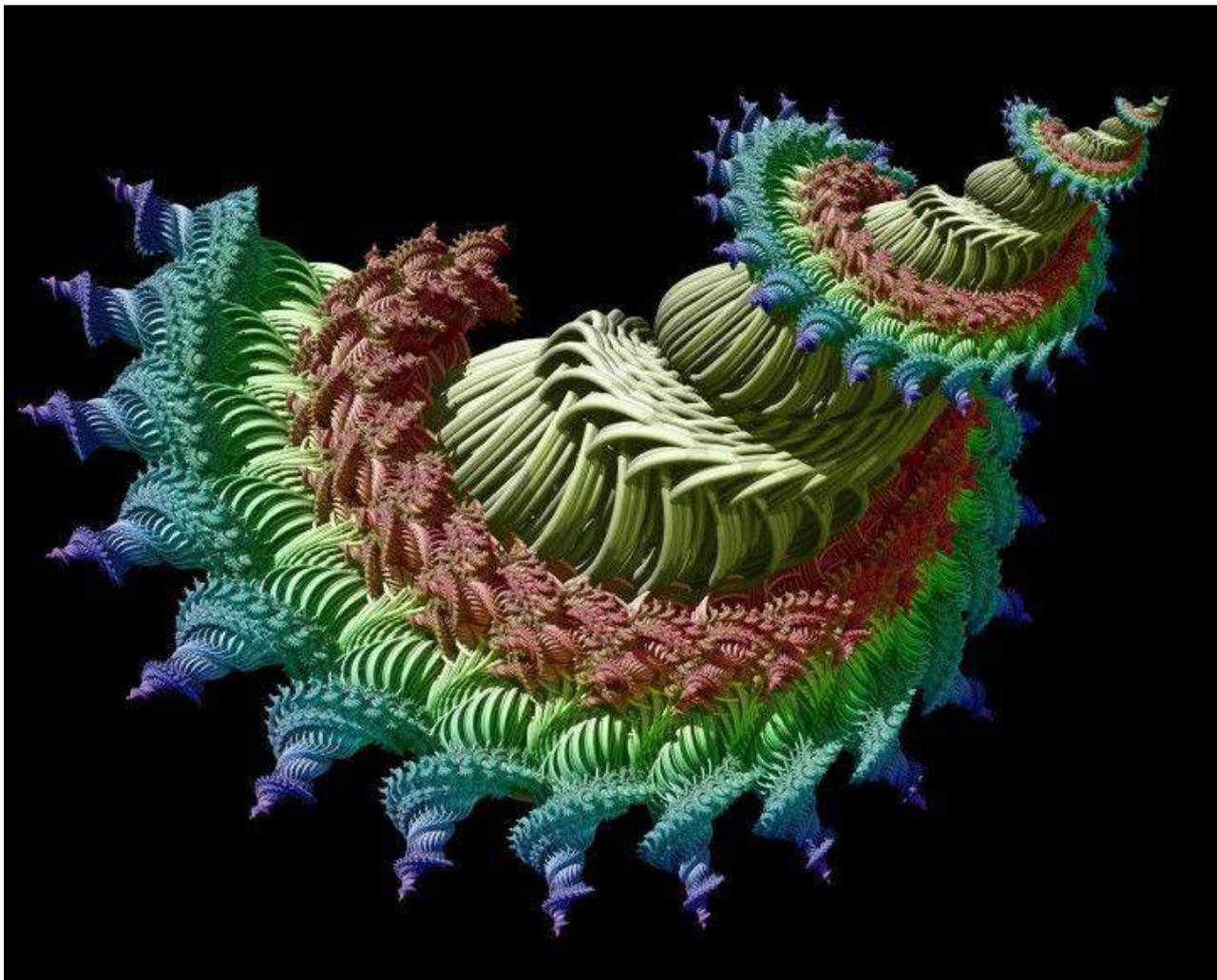


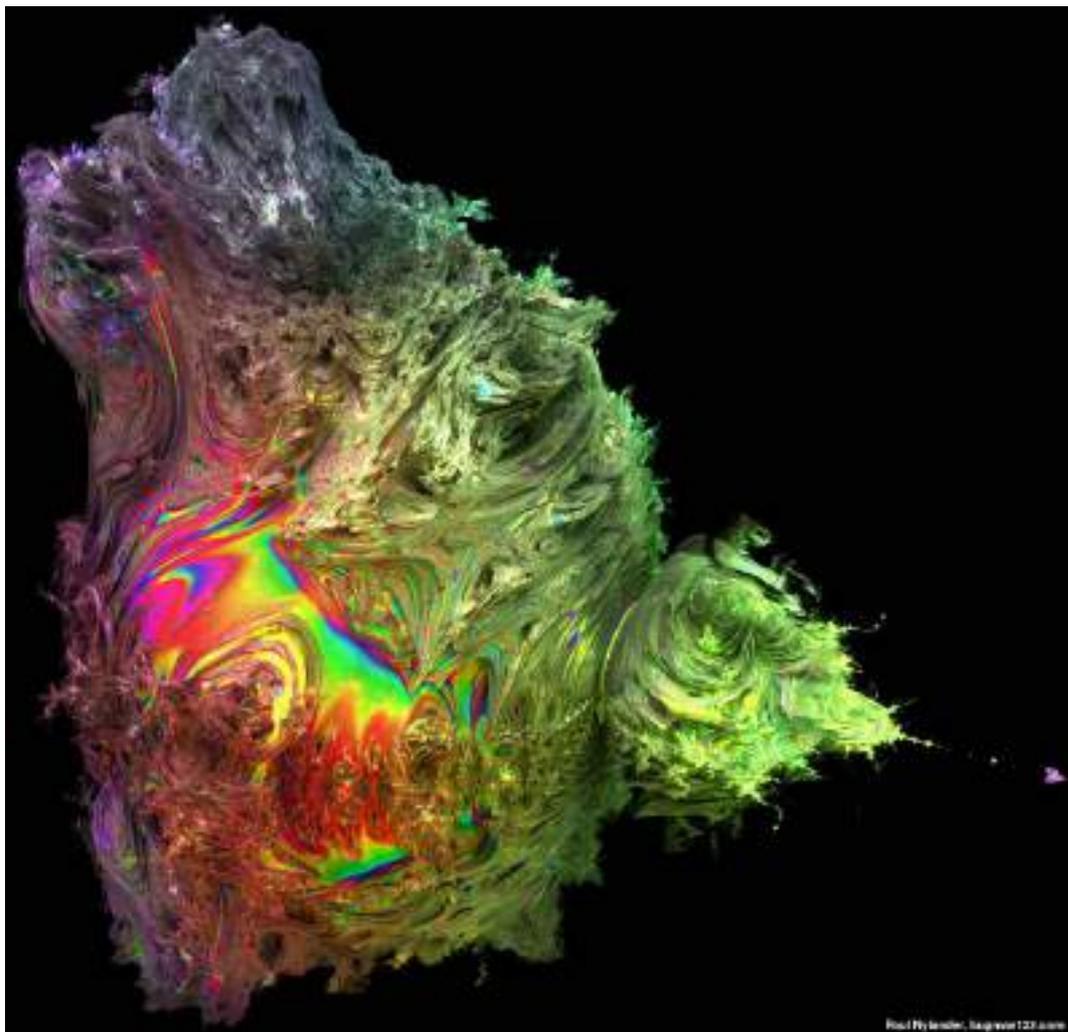






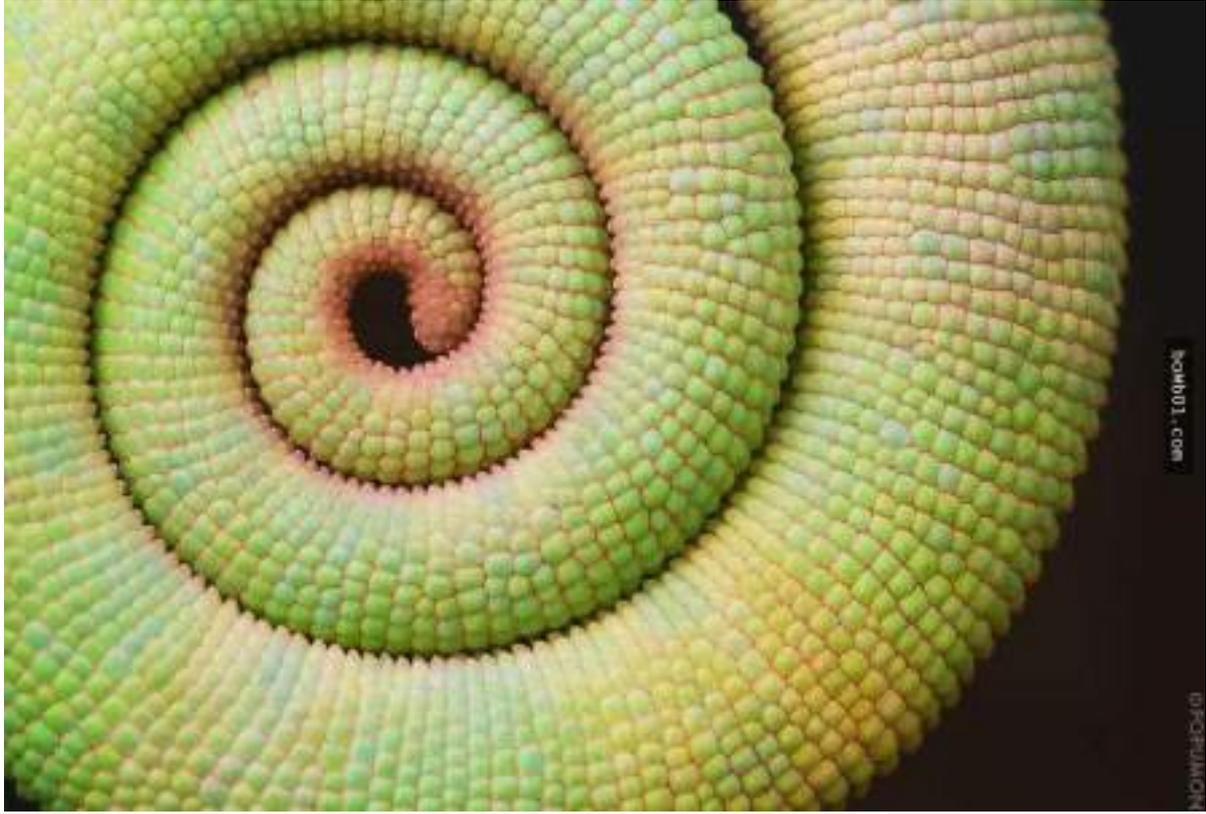






蘆薈





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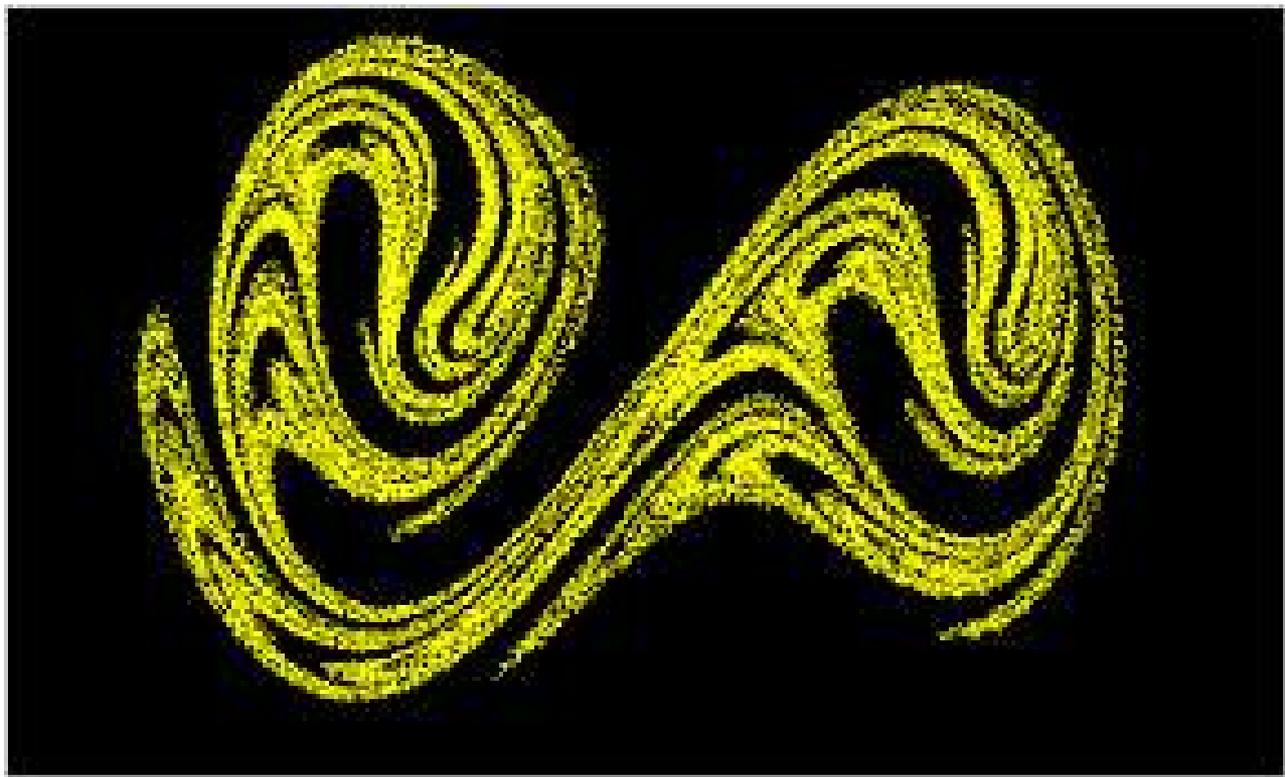
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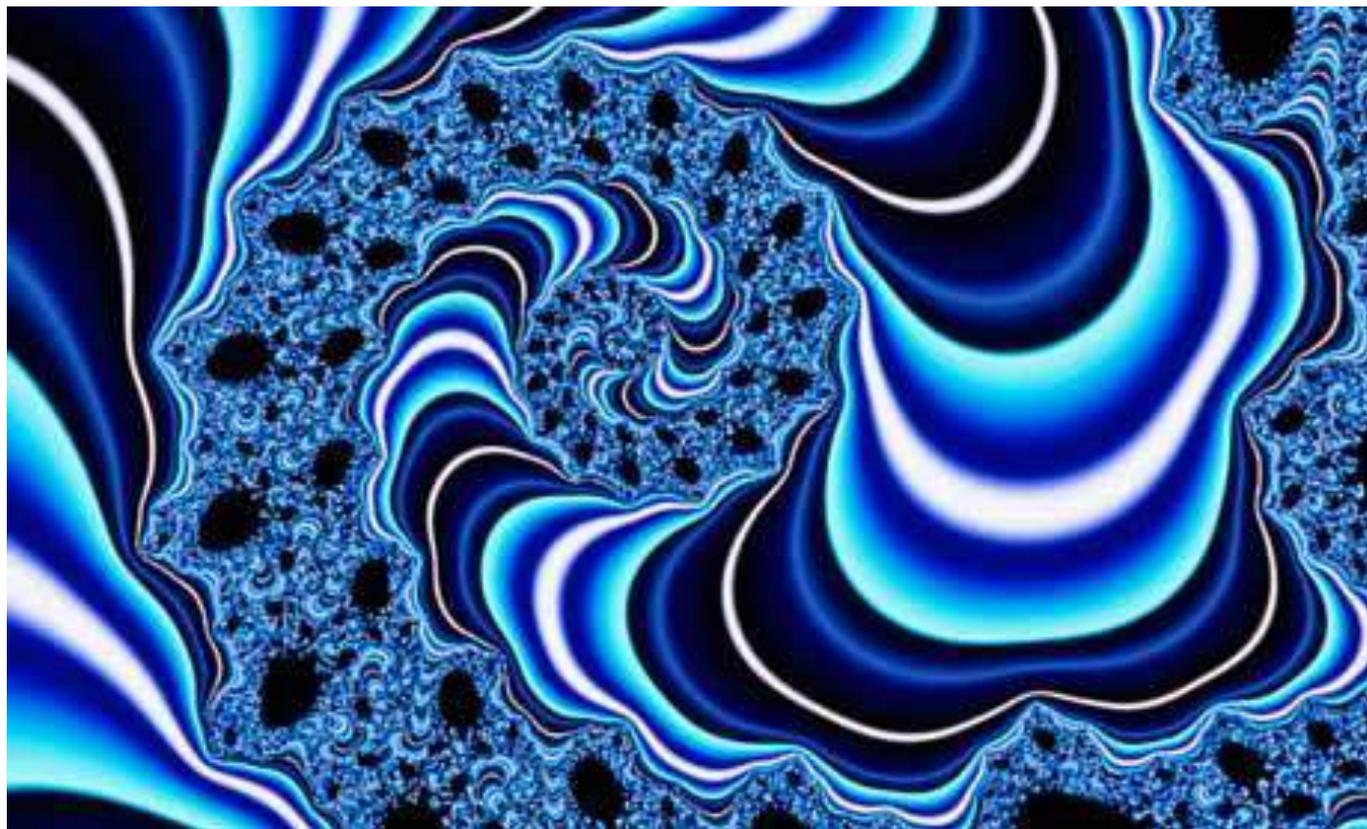


Butterfly Effect



Flap of a butterfly's wing in Brazil can set off a cascade of atmospheric events that, weeks later, spurs the formation of a tornado in Texas





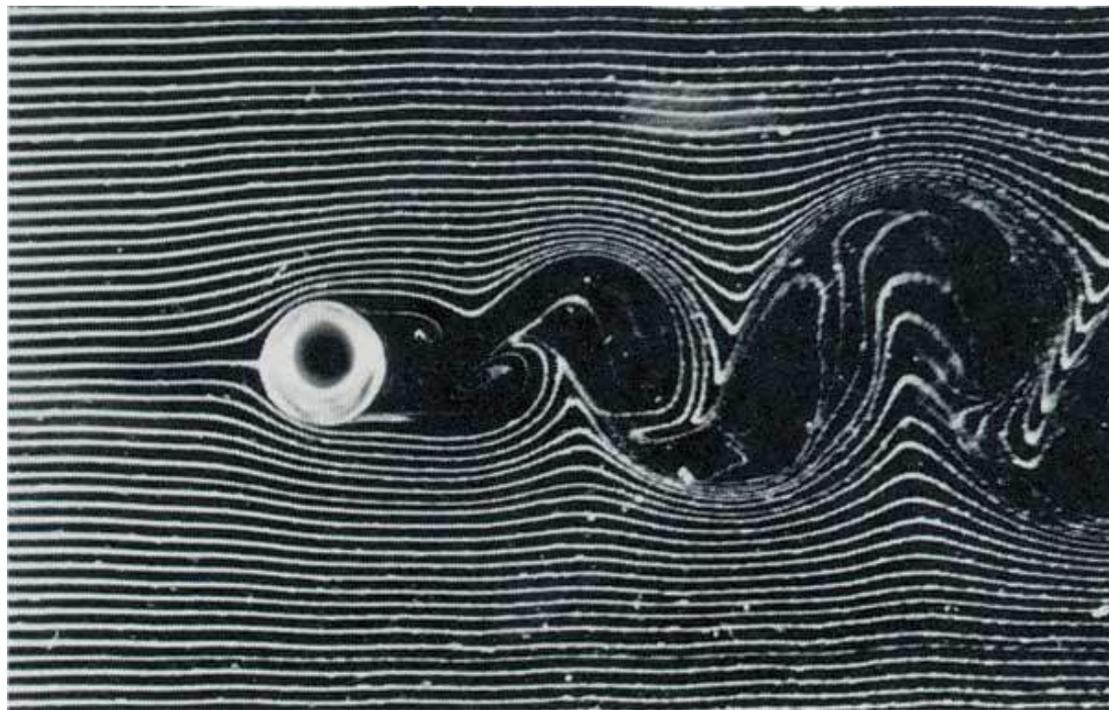


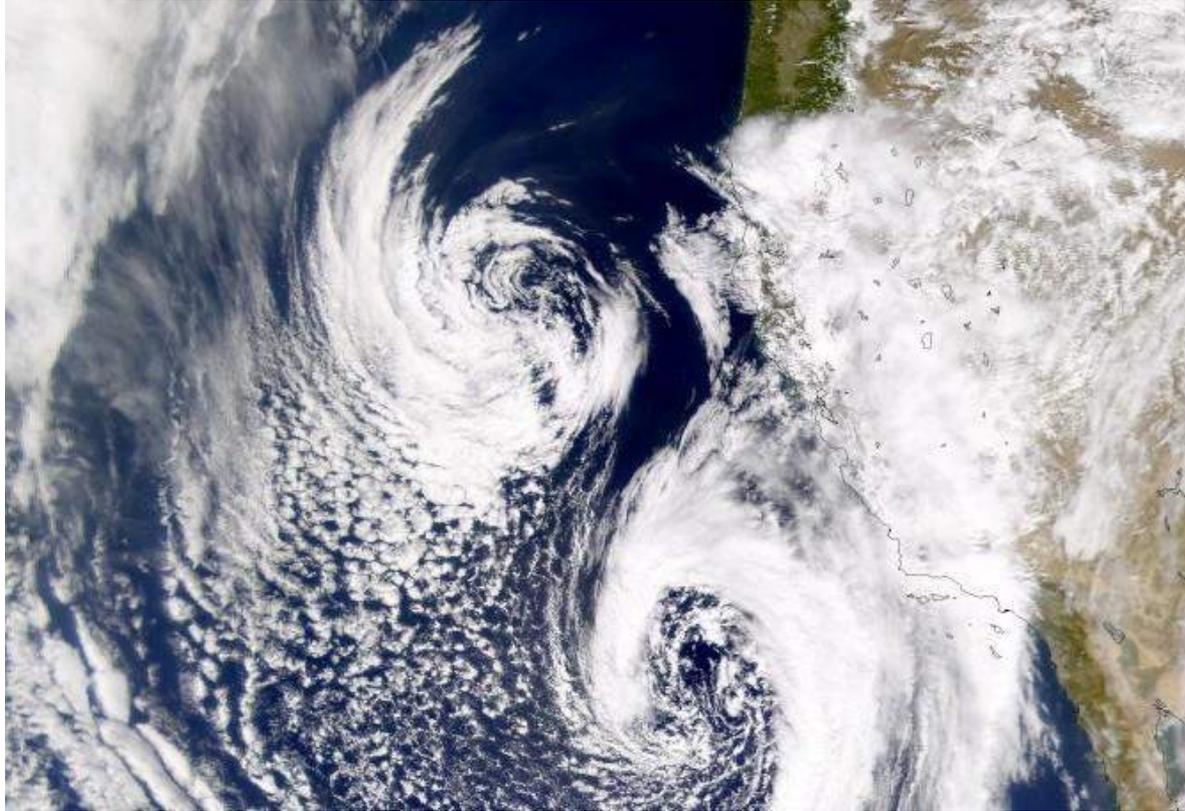


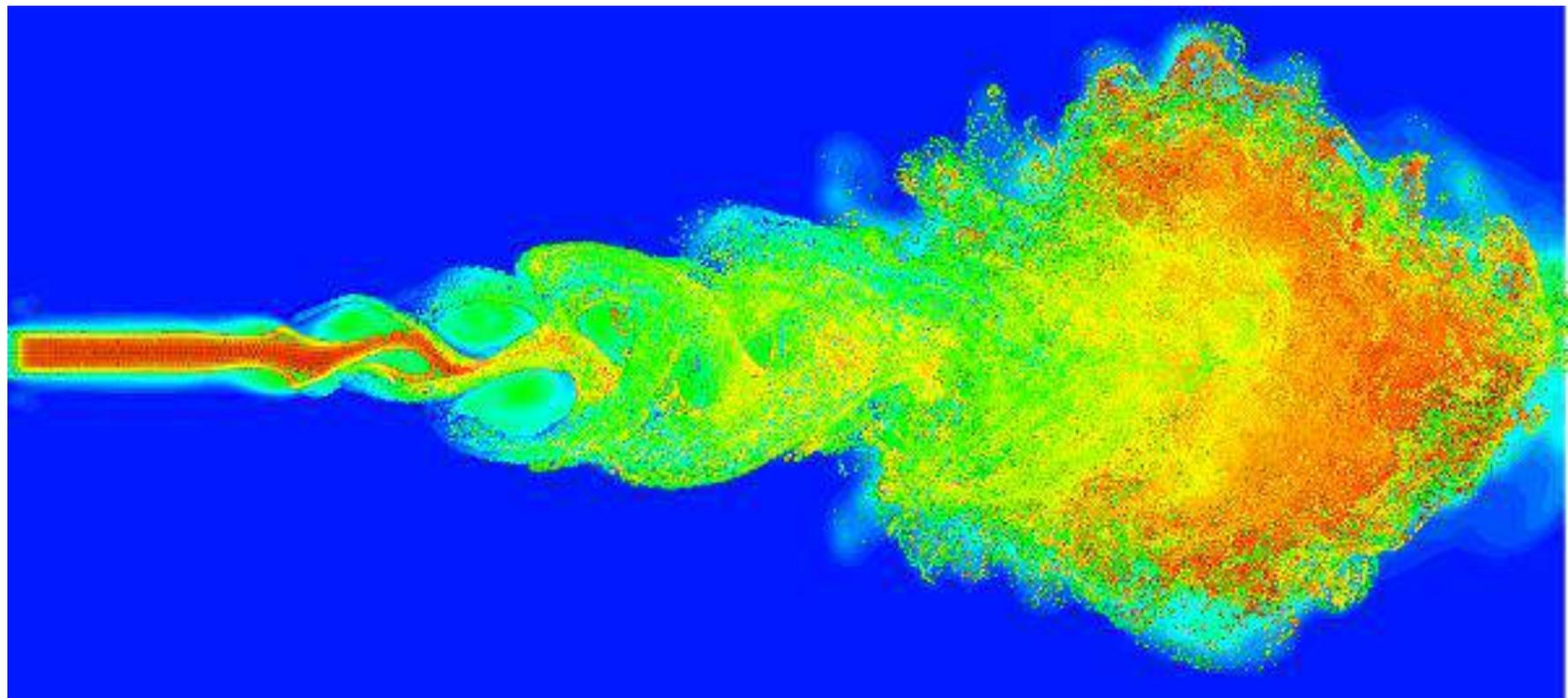














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