

Acción urgente por la Transformación Climática



III Conferencia Internacional Educación en Cambio Climático y Desarrollo Sostenible

22 al 24 JUNIO 9:00 a 16:30 hrs

#ECC2021

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Center for Climate
and Resilience Research
www.CR2.cl



ECBI-CHILE
EDUCACIÓN EN CIENCIAS BASADA EN LA INVESTIGACIÓN



SIEMENS | Stiftung



UNIVERSIDAD DE CHILE
INSTITUTO DE ESTUDIOS AVANZADOS EN EDUCACIÓN IE



Office for
Climate
Education



Con el apoyo de la
Oficina de Santiago
Organización de las Naciones Unidas
para la Educación, la Ciencia y la Cultura

PATROCINA



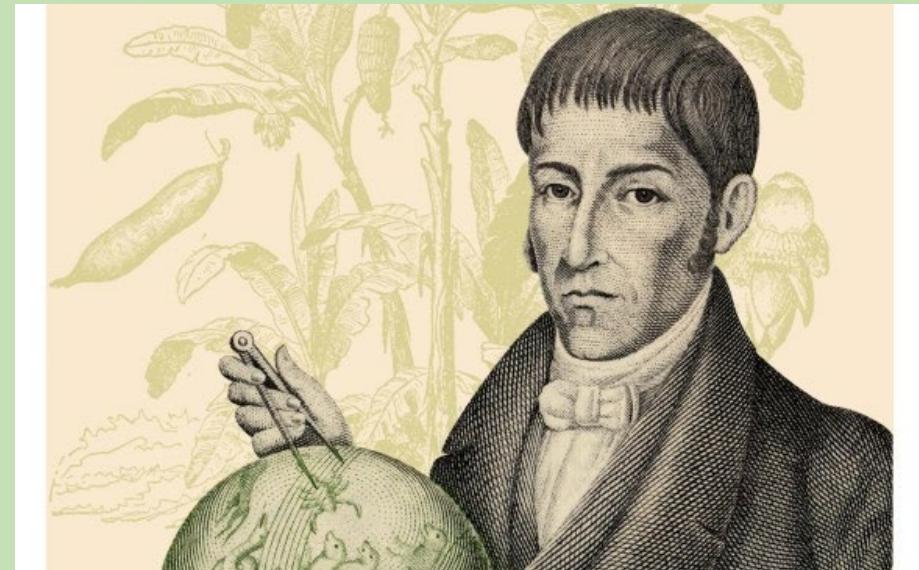
Botschaft
der Bundesrepublik Deutschland
Santiago de Chile

“La naturaleza como Unidad”

Alexander von Humboldt y Francisco José de Caldas, Aportes desde Latinoamérica al Mundo



<https://www.dw.com/es/tras-el-rastro-de-alexander-von-humboldt-en-europa/g-50424058>



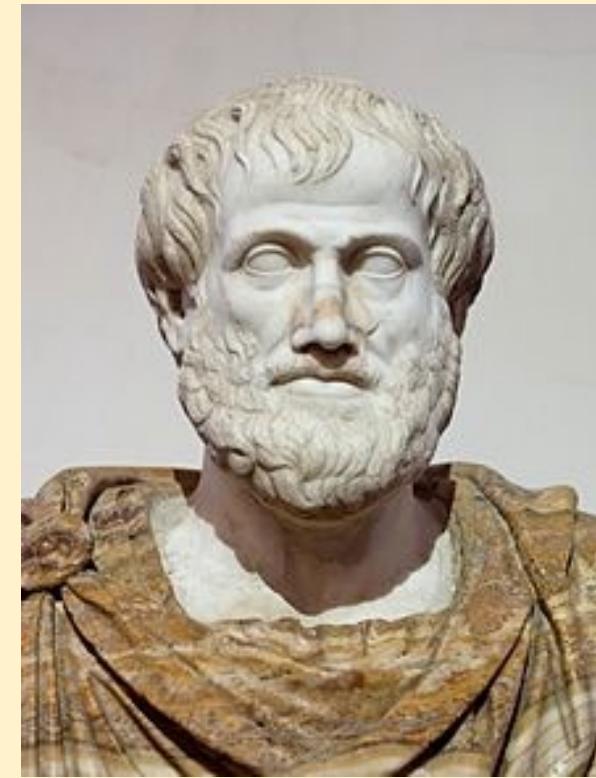
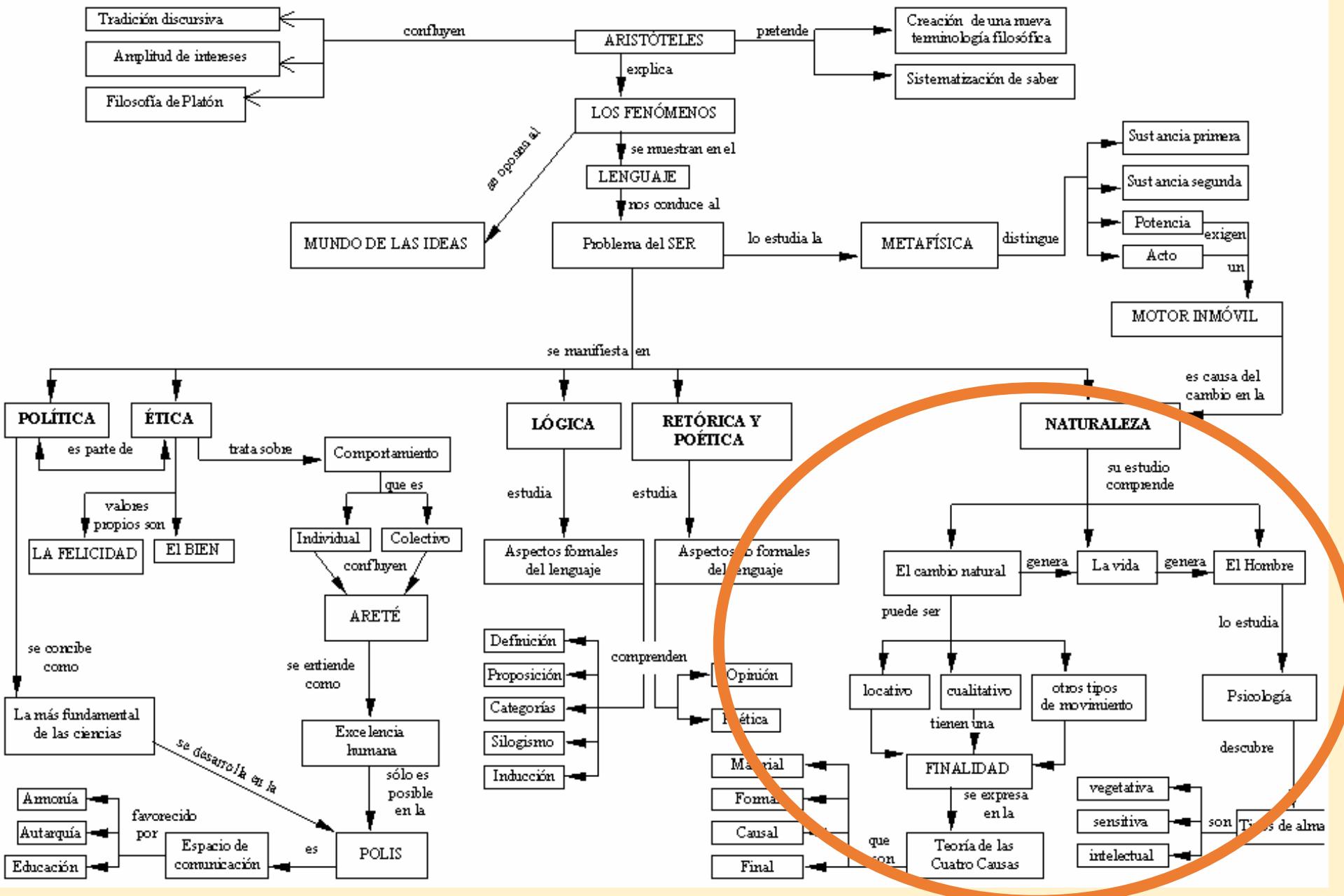
<https://www.elcolombiano.com/cultura/la-ciencia-que-vivio-en-el-sabio-caldas-XM3835451>

Andrés Villegas Cortés
Bogotá - 2021

La naturaleza como unidad

“Humboldt reveló que la naturaleza es una enorme red interconectada y fue más allá. Si bien en su época la ciencia y el arte eran vistos como agua y aceite, el alemán integró a sus observaciones científicas una respuesta emocional.”
(Semana, 2021)

ARISTÓTELES



<https://es.wikipedia.org/wiki/Arist%C3%B3teles>

ARISTOTELES

Ordo secundum quem *METHODI* exhibentur.

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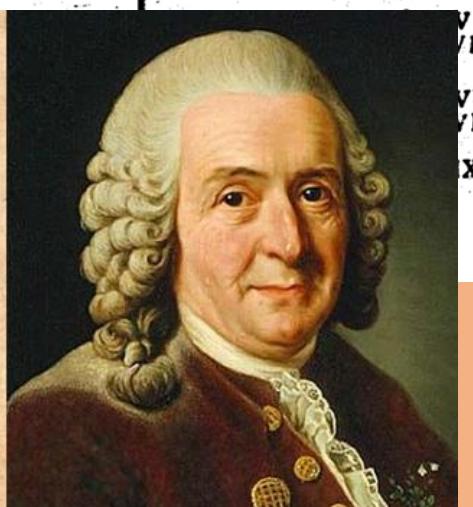
Carlos Linneo

S. RIGIS: MITIS SVCELE ARCHIATRI; MEDIC. & BOTAN.
PROFESS. UPSAL; EQUITIS AUK. DE STELLA POLARI;
REC. NON ACAD. IMPER. MONSP. BEXOL. TOLOS.
UPSL. STOCKE. SOC. & PARIS. CORESP.

SPECIES PLANTARUM, EXHIBENTES PLANTAS RITE COGNITAS,

AD
GENERA RELATAS,
CUM

DIFFERENTIIS SPECIFICIS,
NOMINIBUS TRIVIALIBUS,
SYNONYMIS SELECTIS,
LOCIS NATALIBUS,
SECUNDUM
SYSTEMA SEXUALE
DIGESTAS.

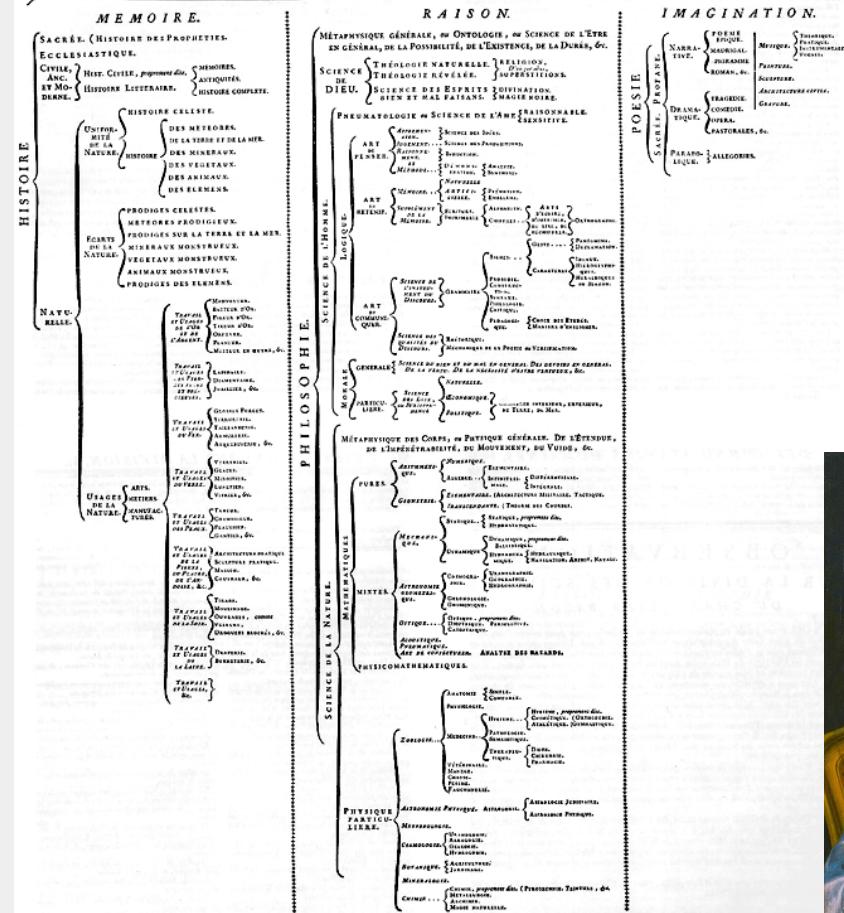


https://upload.wikimedia.org/wikipedia/commons/7/70/Taxonomy_Linn%C3%A9_%26_Diderot.jpg

Fruu Corol- la Flore- cijus Smelli- bus Frustratione seu Compositorum Umbellacrossum Granulum 	I CASALPINI II MORISONI III RAJI IV KNAUTHII V HERMANNI VI BOERHAAVII VII RIVINI VIII RUPPII IX LUDWIGH X KNAUTI XI TOURNEFORTII XII PONTEDERAE XIII MAGNOLII XIV NOSTRA XV LINNÆI XVI FRAGMENT XVII VAILLANTII XVIII PONTEDERAE XIX ARTEFI XX MORISONI XXI RAJI XXII SCHUECHZERI XXIII MICHELII XXIV LINNÆI V DILLENII VI MICHELII VII DILLENII VIII MICHELII X LINNÆI	pag. 1 33 65 105 325 157 201 233 264 297 319 369 377 405 441 585 517 531 533 551 559 575 577 599 591 593 601 605
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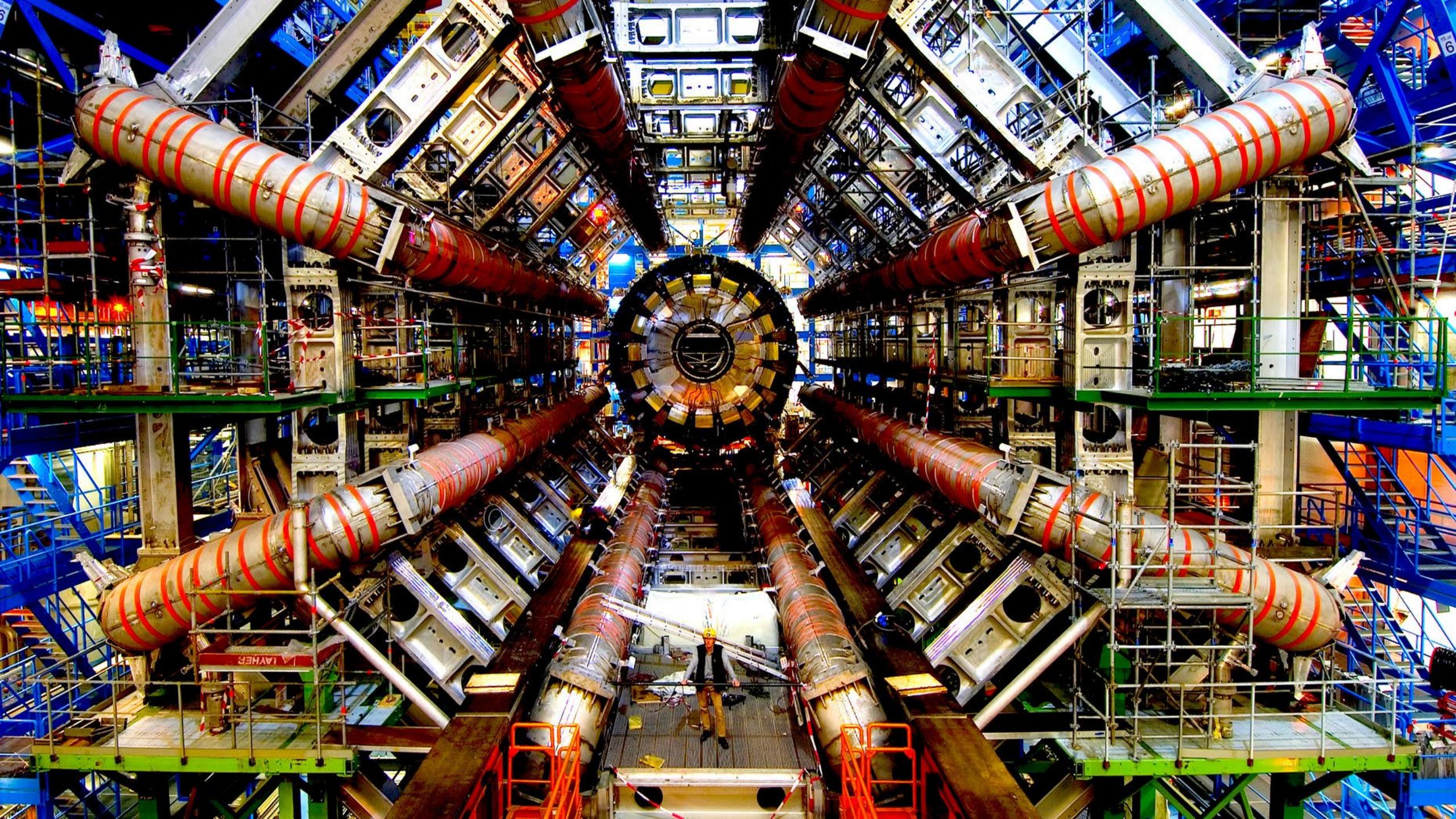
* SYSTÈME FIGURÉ DES CONNOISSANCES HUMAINES.

ENTENDEMENT.



https://es.wikipedia.org/wiki/Denis_Diderot

Denis Diderot



Modelo Estándar de Partículas...

Tres generaciones de la materia (fermiones)					
	I	II	III		
masa→	2,4 MeV/c ²	1,27 GeV/c ²	171,2 GeV/c ²	0	
carga→	2/3	2/3	2/3	0	
espín→	1/2	1/2	1/2	1	
nombre→	U up	C charm	t top	Y Foton	G Graviton
Quark					
	4,8 MeV/c ² -1/3 1/2 down	104 MeV/c ² -1/3 1/2 strange	4,2 GeV/c ² -1/3 1/2 bottom	0 0 1 Gluon	? GeV/c ² 0 0 0 Boson Higgs
Lepton					
	<2,2 eV/c ² 0 1/2 Neutrino electrónico	<0,17 MeV/c ² 0 1/2 Neutrino muónico	<15,5 MeV/c ² 0 1/2 Neutrino tauónico	91,2 GeV/c ² 0 1 Z ⁰ Boson Z	
	0,511 MeV/c ² -1 1/2 Electrón	105,7 MeV/c ² -1 1/2 Muón	1,777 GeV/c ² -1 1/2 Tau	80,4 GeV/c ² ±1 1 W [±] Boson W	Bosones de gauge

Alexander Von Humbolt



1769

1791

1795

1799

1804

1808

1827

1845

1859

Friedrich Wilhelm Heinrich Alexander von Humboldt
Su padre: Oficial del ejército y chambelán de la Princesa
Su madre: Marie Elisabeth von Holwede

1791: Escuela de minas de Freiberg (22)

1795: Consejo Superior de Minas (26)

1799: Viaja a España, Venezuela (30)
1800: Viaja a Cuba (31)
1801: Visita Colombia
1802-1804: Perú, Ecuador, México, EUA (32-34)

1808: Publicación de *Ansichten de Natur* (Aspectos de la Naturaleza) (39)
1827: se terminan de publicar los 35 volúmenes de su obra (58)

1845: Publicación de *Kosmos* (iniciada en 1834) reside en Berlín y está dedicado a la diplomacia. (76)

Fallece a los 89 años de edad



Francisco José de Caldas



1768

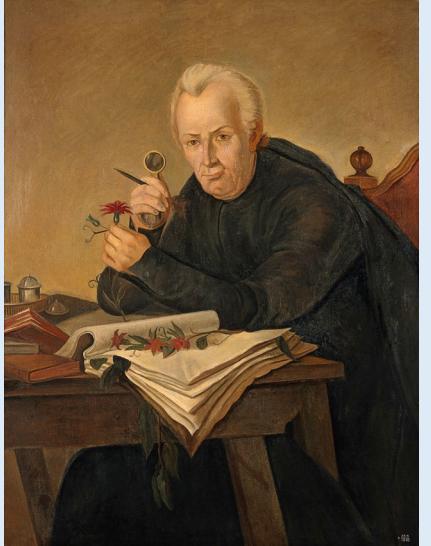
Nace Popayán (Colombia)
29/oct/1768
Padres: José de Caldas y
Vicenta Tenorio
Estudia en Popayán

1793

-

1801

1793: termina sus
estudios de Derecho (25)
1801: inicia fluida
comunicación con Mutis,
y ese año conoce a Von
Humbolt (33)



1805

-

1808

1805: Nombrado
astrónomo de la Real
Expedición Botánica (37)
1808: Nombrado director
del Observatorio
Astronómico (40)



1810

-

1812

1810: Cerrado proyecto
Expedición Botánica (42)
1811: Nombrado Cuerpo
Ingenieros (43)
1812: Se desvincula de su
protector A. Nariño (44)



1816

1816:
Muere
Fusilado
(47)



offre par la ^{1^{re}} Soledad Acosta de Samper

Maison où a vécu le Baron Alexandre de Humboldt

Bogota



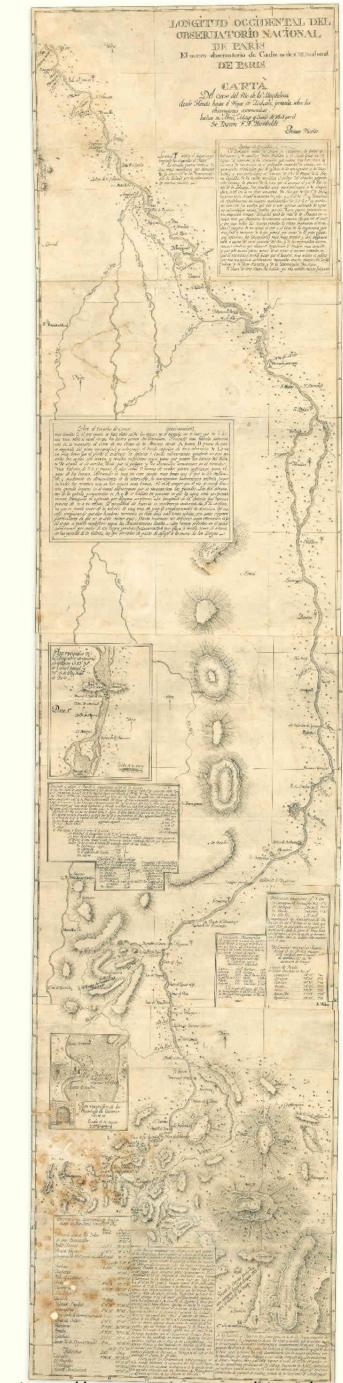
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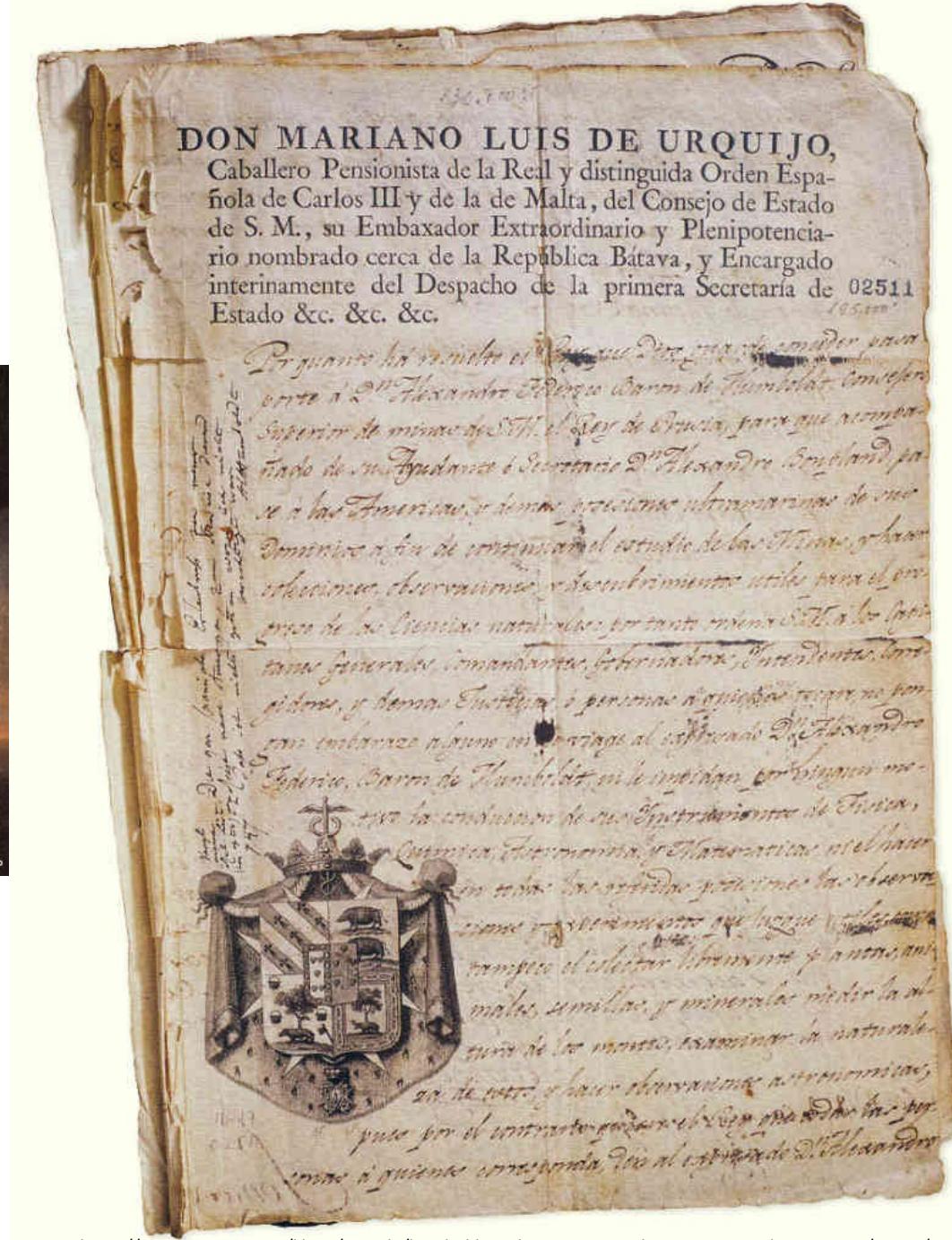


https://es.wikipedia.org/wiki/Casa_Museo_Francisco_Jos%C3%A9_de_Caldas

<https://www.semana.com/libros/articulo/humboldt-en-la-nueva-granada-reconstruyendo-sus-pasos/70792/>



<https://www.dw.com/es/tras-el-rastro-de-alexander-von-humboldt-en-europa/g-50424058>

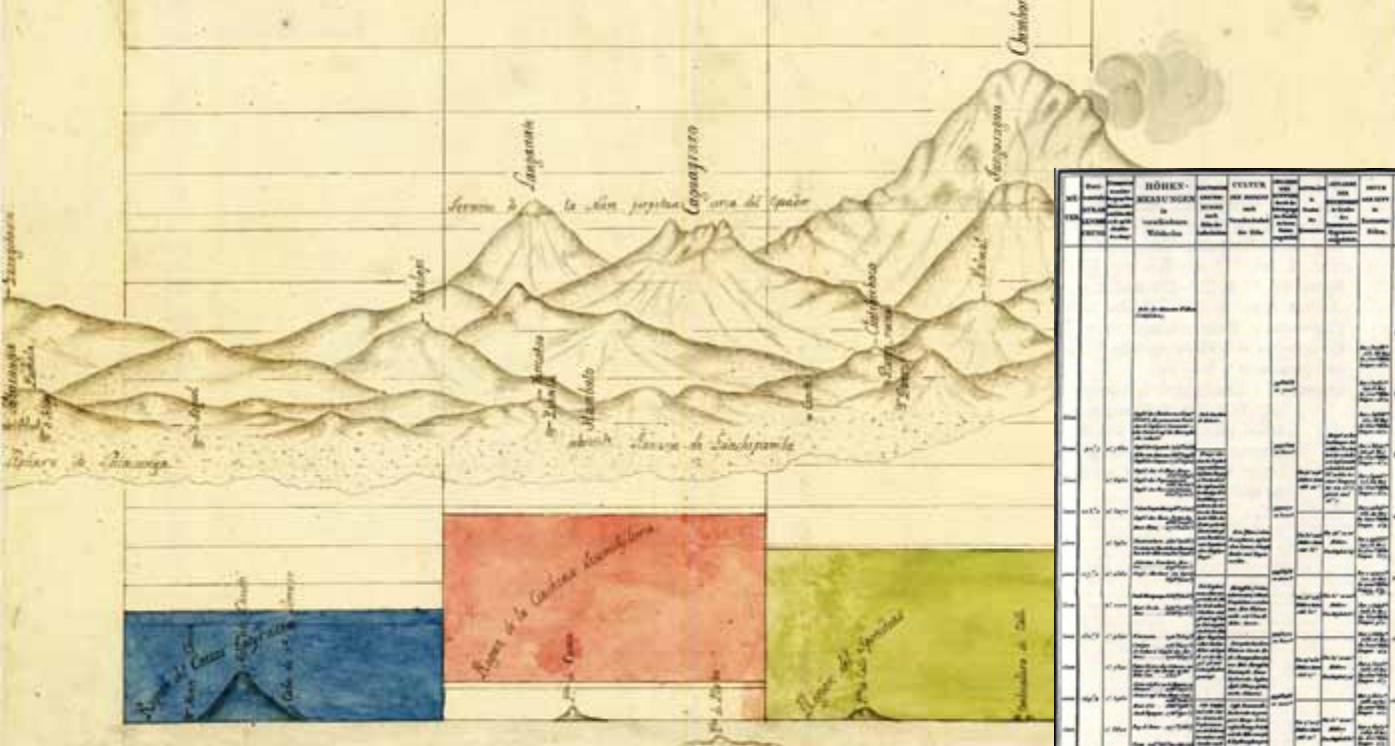


<https://www.semana.com/libros/articulo/humboldt-en-la-nueva-granada-reconstruyendo-sus-pasos/70792/>

<https://www.semana.com/libros/articulo/humboldt-en-la-nueva-granada-reconstruyendo-sus-pasos/70792/>

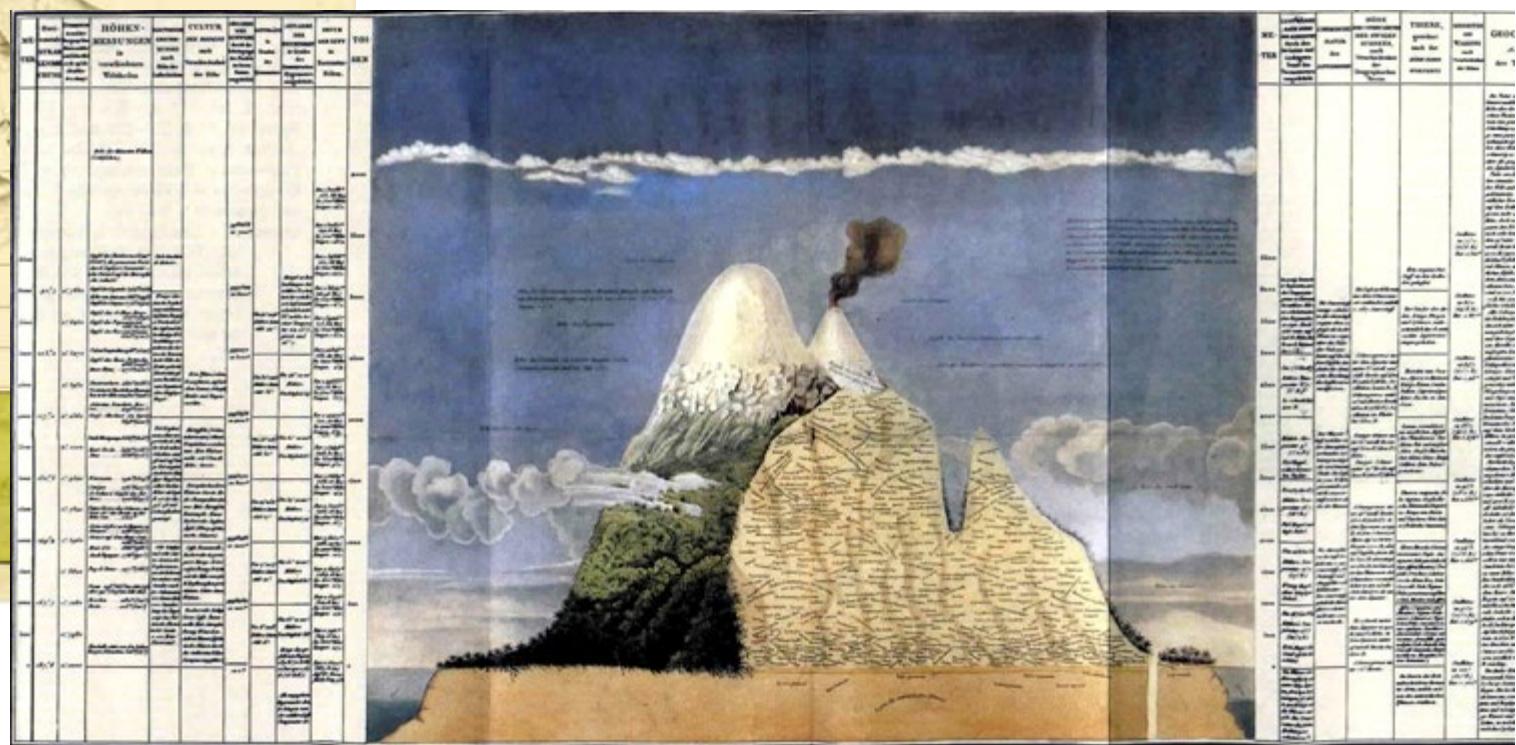
Num. J.

<i>Coccos Botryacea</i>	<i>Archena diacanthiflora</i>	<i>Spondias</i>
<i>Sermone superior</i> 538, 19	<i>Sermone superior</i> 1004, 14	<i>Serm. superior</i> 226, 18
<i>Sermone inferior</i> 620, 12	<i>Sermone inferior</i> 113, 73	<i>Serm. inferior</i> 206, 22
<i>Indio de la Loma</i> 531, 13	<i>Indio de la Loma</i> 522, 10	<i>Indio de la Loma</i> 134, 10



<https://www.banrepultural.org/historia-natural-politica/hnp-16.html>

<https://noticias.masverdedigital.com/un-dibujo-hecho-por-humboldt-hace-200-anos-permite-apreciar-las-alteraciones-del-cambio-climatico-en-america-latina/>



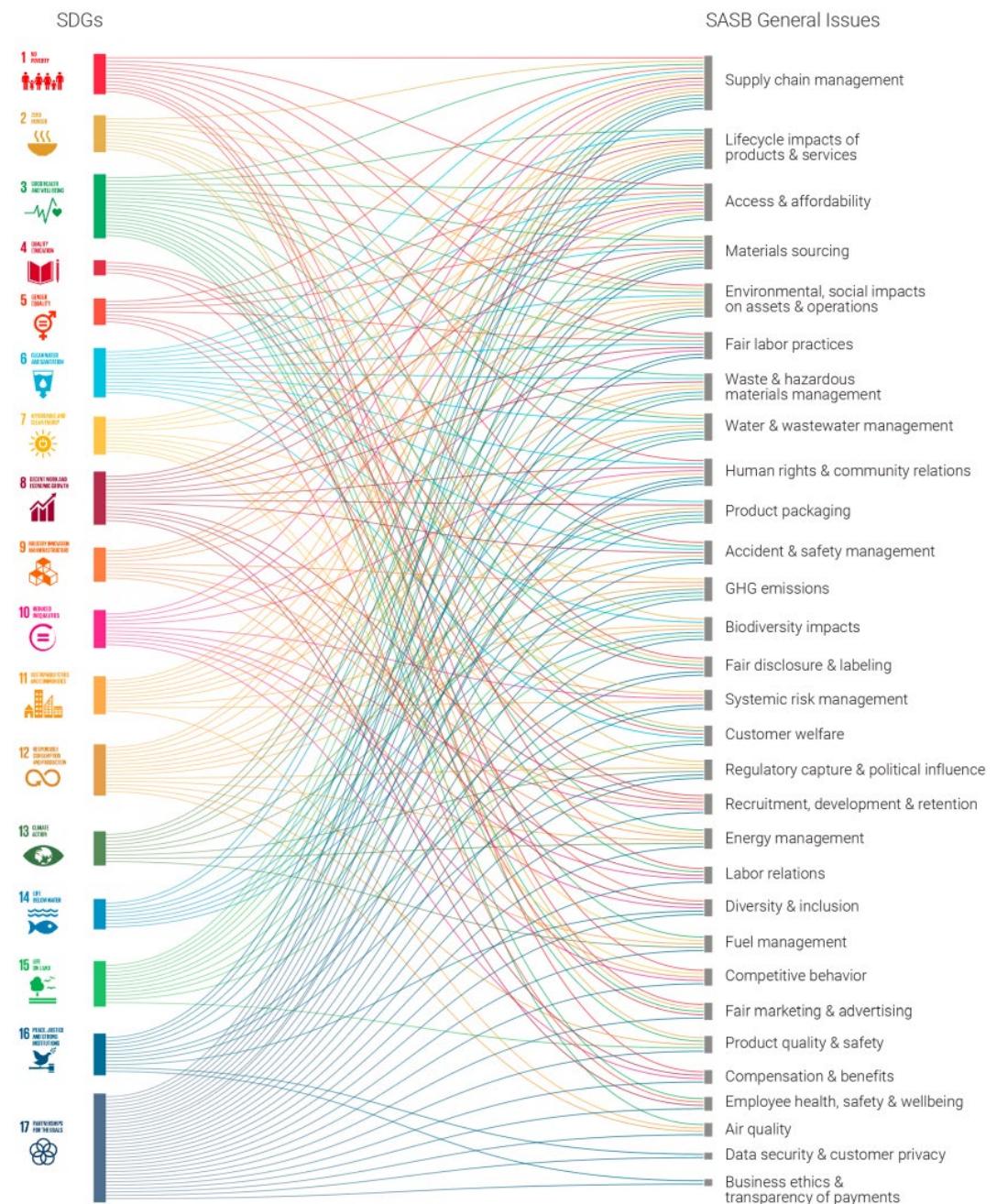
Geographie der Pflanzen in den Tropen-Ländern;

gegründet auf Beobachtungen und Messungen, welche vom 10° Grade nördlicher bis zum 10° Grade südlicher Breite angestellt werden sind, in den Jahren 52

(viii) ALEXANDER VON HUMBOLDT and A. G. BONPLAND.



Relevancia de los Objetivos de Desarrollo Sostenible (ODS)



<https://sdgs.un.org/es/goals>

<https://materiality.sasb.org/>

Sustainable Development Goals

Sustainable Accounting Standards Board

Table 5. SDG Relevance Index (SRI) and Target Relevance Index (TRI).

SASB General Issue Category	# of SDGs Impacted	#of Targets Impacted	SRI	TRI
Environment				
GHG emissions	3	4	18.75%	3.74%
Air quality	3	7	18.75%	6.54%
Energy management	5	13	31.25%	12.15%
Fuel management	4	11	25.00%	10.28%
Water and wastewater management	7	24	43.75%	22.43%
Waste and hazardous materials management	7	20	43.75%	18.69%
Biodiversity impacts	6	17	37.50%	15.89%
Social Capital				
Human rights and community relations	6	24	37.50%	22.43%
Access and affordability	9	18	56.25%	16.82%
Customer welfare	5	12	31.25%	11.21%
Data security and customer privacy	1	1	6.25%	0.93%
Fair disclosure and labeling	4	8	25.00%	7.48%
Fair marketing and advertising	4	10	25.00%	9.35%
Human Capital				
Labor relations	4	16	25.00%	14.95%
Fair labor practices	7	18	43.75%	16.82%
Employee health safety and wellbeing	3	13	18.75%	12.15%
Diversity and inclusion	4	17	25.00%	15.89%
Compensation and benefits	3	8	18.75%	7.48%
Recruitment development and retention	5	14	31.25%	13.08%
Business Model and Innovation				
Lifecycle impacts of products and services	11	27	68.75%	25.23%
Environmental social impacts on assets & operations		19	56.25%	17.76%
Product packaging	6	10	37.50%	9.35%
Product quality and safety	4	9	25.00%	8.41%
Leadership and Governance				
Systemic risk management	5	7	31.25%	6.54%
Accident and safety management	7	13	43.75%	12.15%
Business ethics and transparency of payments	1	2	6.25%	1.87%
Competitive behavior	4	9	25.00%	8.41%
Regulatory capture and political influence	5	12	31.25%	11.21%
Materials sourcing	8	17	50.00%	15.89%
Supply chain management	14	36	87.50%	33.64%



SASB Materiality Map®

SASB's Materiality Map® identifies sustainability issues that are likely to affect the financial condition or operating performance of companies within an industry. In the left-hand column, SASB identifies 26 sustainability-related business issues, or General Issue Categories, which encompass a range of Disclosure Topics and their associated Accounting Metrics that vary by industry. For example, the General Issue Category of Customer Welfare encompasses both the Health and Nutrition topic in the Processed Foods industry and the Counterfeit Drugs topic in the Health Care Distributors industry. For commercial use terms of the SASB Materiality Map®, please [contact us](#).

The SASB Materiality Map® does not contain all guidance necessary for use of the standards. [To download the SASB standards, click here.](#)

マテリアリティマップの日本語版をご覧になるには、[ここをクリックしてください](#) To see a version of the Materiality Map in Japanese, please [click here](#).

Sector Level Map

- Issue is likely to be material for more than 50% of industries in sector
- Issue is likely to be material for fewer than 50% of industries in sector
- Issue is not likely to be material for any of the industries in sector

Industry Level Map

- Not likely a material issue for companies in the industry
- Likely a material issue for companies in the industry

		Consumer Goods	Extractives & Minerals Processing	Financials	Food & Beverage	Health Care	Infrastructure	Renewable Resources & Alternative Energy	Resource Transformation	Services	Technology & Communications	Transportation
Dimension	General Issue Category 	Click to expand	Click to expand	Click to expand	Click to expand	Click to expand	Click to expand	Click to expand	Click to expand	Click to expand	Click to expand	Click to expand
Environment	GHG Emissions											
	Air Quality											
	Energy Management											
	Water & Wastewater Management											
	Waste & Hazardous Materials Management											
	Ecological Impacts											
Social Capital	Human Rights & Community Relations											
	Customer Privacy											
	Data Security											
	Access & Affordability											
	Product Quality & Safety											
	Customer Welfare											
Human Capital	Selling Practices & Product Labeling											
	Labor Practices											
	Employee Health & Safety											
	Employee Engagement, Diversity & Inclusion											
Business Model & Innovation	Product Design & Lifecycle Management											
	Business Model Resilience											
	Supply Chain Management											
	Materials Sourcing & Efficiency											
	Physical Impacts of Climate Change											
Leadership & Governance	Business Ethics											
	Competitive Behavior											
	Management of the Legal & Regulatory Environment											
	Critical Incident Risk Management											
	Systemic Risk Management											

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