



POLITECNICO DI TORINO

1^a Facoltà di Architettura a.a. 2011-12
Corso di laurea magistrale in ECODESIGN

prof. Pierpaolo Peruccio

studenti: Dong Lydya, Cabral Joao Paolo,
Ravera Chion Alessio, Tedesco Alice



On Growth and form

D'Arcy Thompson



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D' ARCY THOMPSON



1860

1870

1877

1880

'83

'84

'95

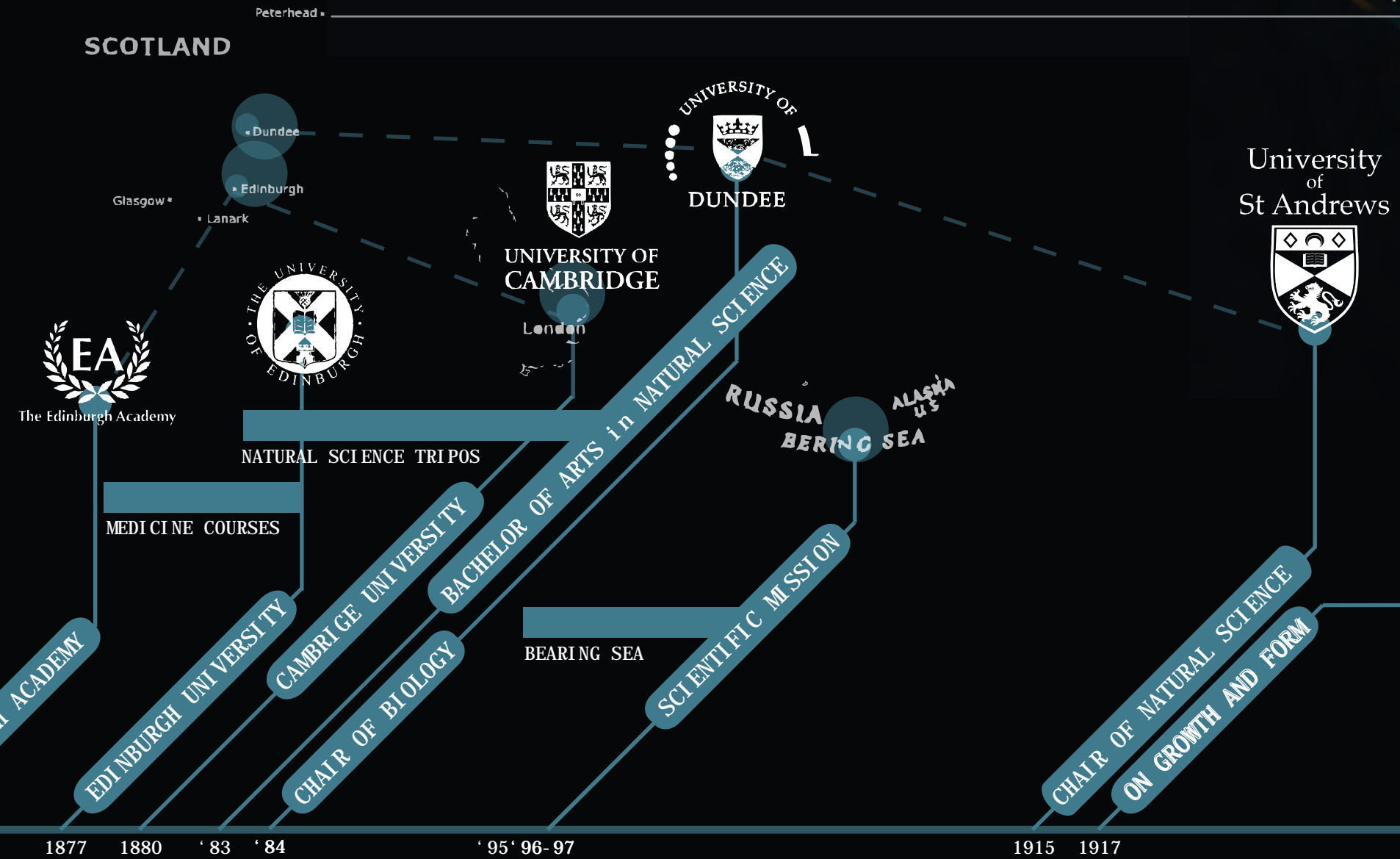
'96-97

1915

1917

1942
DEATH

1946



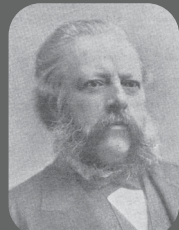


D' ARCY THOMPSON



1860

TWO FIGURES
PLAYED AN IMPORTANT
ROLE IN HIS **UPBRINGING**



Joseph Gamgee

grandfather
GAVE HIM
THE LOVE FOR
MATHEMATICAL
SCIENCES.



D'Arcy Wentworth
Thompson senior

father
GAVE HIM
LOVE FOR
CLASSIC
THINKING AND
NATURAL
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THE TOP OF THE
CLASS AND WON THE
FIRST PRIZES IN:

Classics,
Greek Testament,
Mathematics and
Modern Languages.

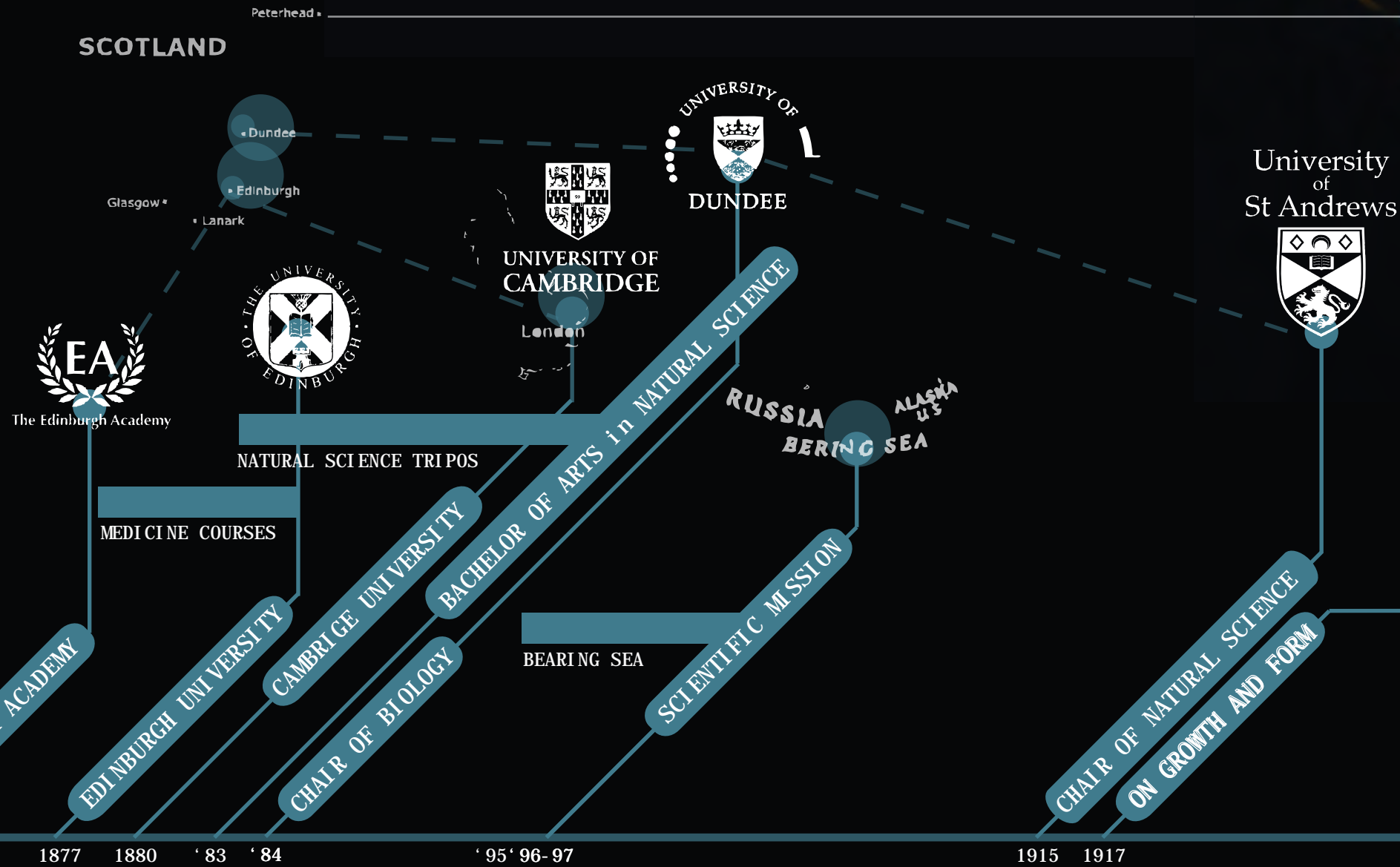
CLASSIFICATION OF
DIFFERENT SPECIES

*A Bibliography of Protozoa,
Sponges, Coelenterata,
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the Polyzoa, Brachiopoda,
and Tunicata, for the Years
1861-1883*

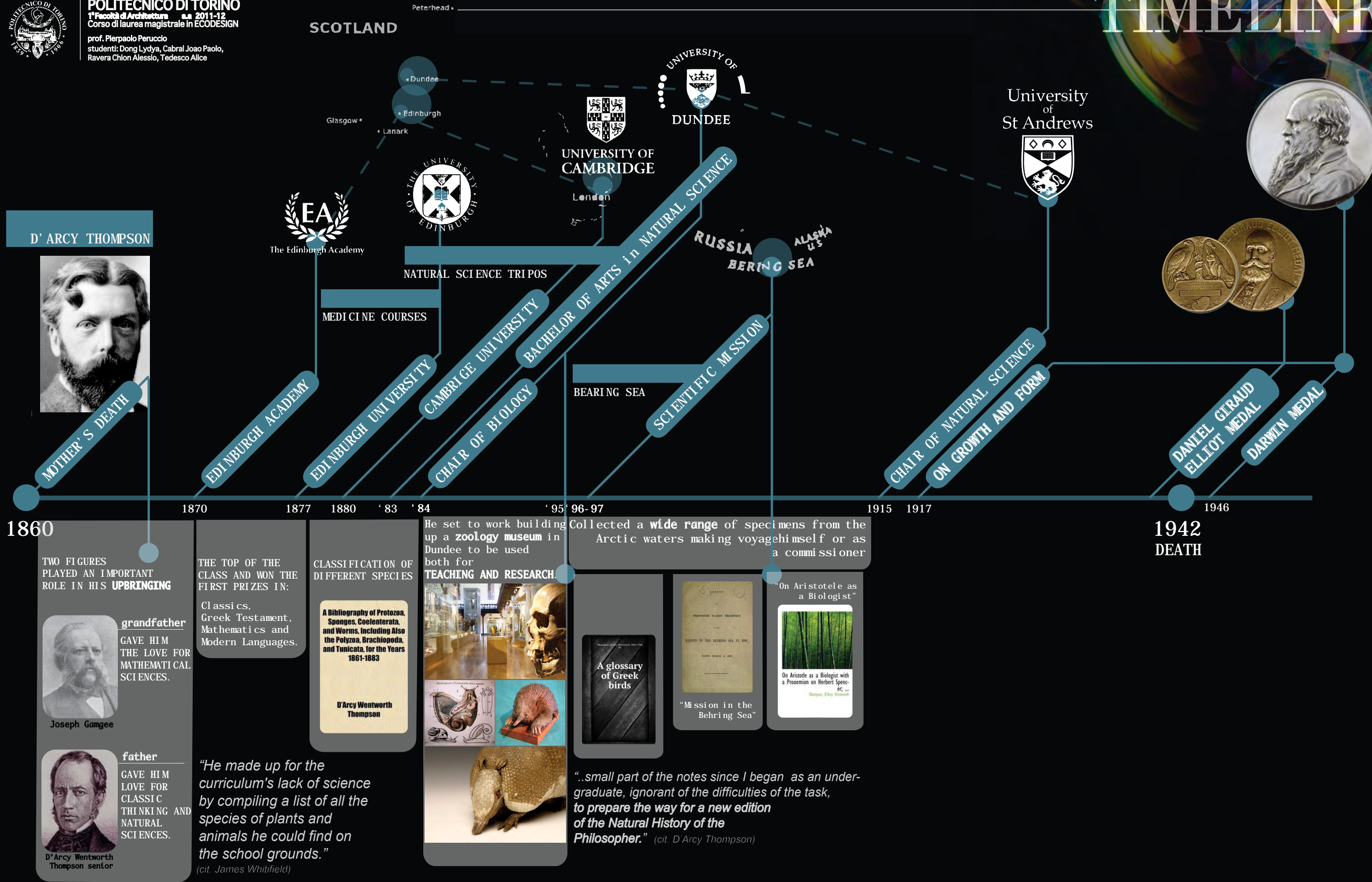
D'Arcy Wentworth
Thompson

*"He made up for the
curriculum's lack of science
by compiling a list of all the
species of plants and
animals he could find on
the school grounds."*

(cit. James Whitfield)



1942
DEATH



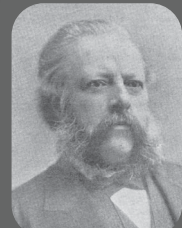
D' ARCY THOMPSON



MOTHER'S DEATH

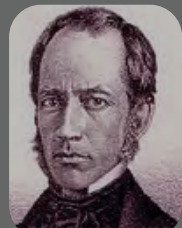
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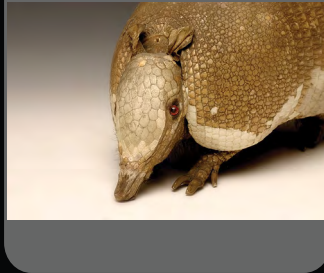
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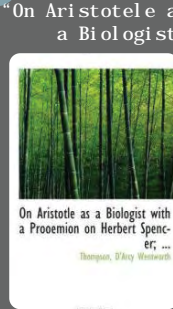
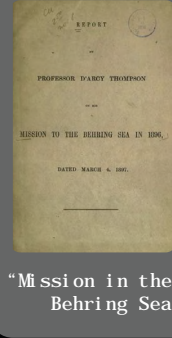
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D'Arcy Wentworth Thompson

He set to work building up a **zoology museum** in Dundee to be used both for **TEACHING AND RESEARCH.**



Collected a **wide range** of specimens from the Arctic waters making voyage himself or as a commissioner



"..small part of the notes since I began as an undergraduate, ignorant of the difficulties of the task, to prepare the way for a new edition of the **Natural History of the Philosopher.**" (cit. D'Arcy Thompson)

University of St Andrews



DANIEL GIRAUD ELLIOT MEDAL

DARWIN MEDAL

1942 DEATH



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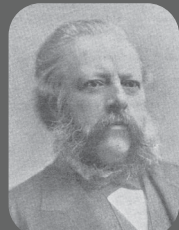
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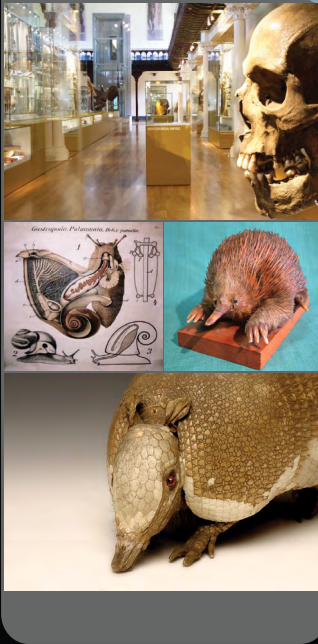
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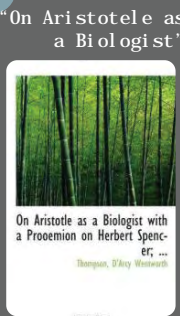
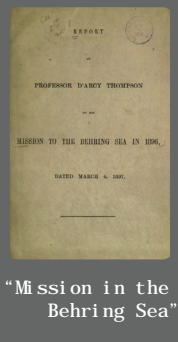
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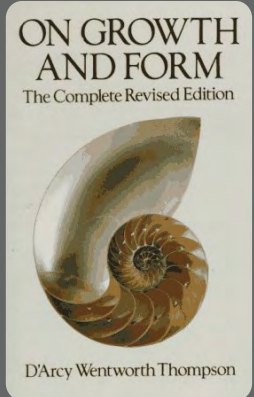


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to prepare the way for a new edition
of the *Natural History of the
Philosopher.*" (cit. D'Arcy Thompson)

"departed from contemporary zoology, which was occupied
with orthodox questions of comparative anatomy and
evolution, and treated morphological problems by mathematics.
the theme was original, unorthodox, and revolutionary."

written around **300**
scientific articles
and **books** on
different issues

"ON GROWTH
AND FORM"
all D'Arcy's **various**
skills came together
in his famous book.

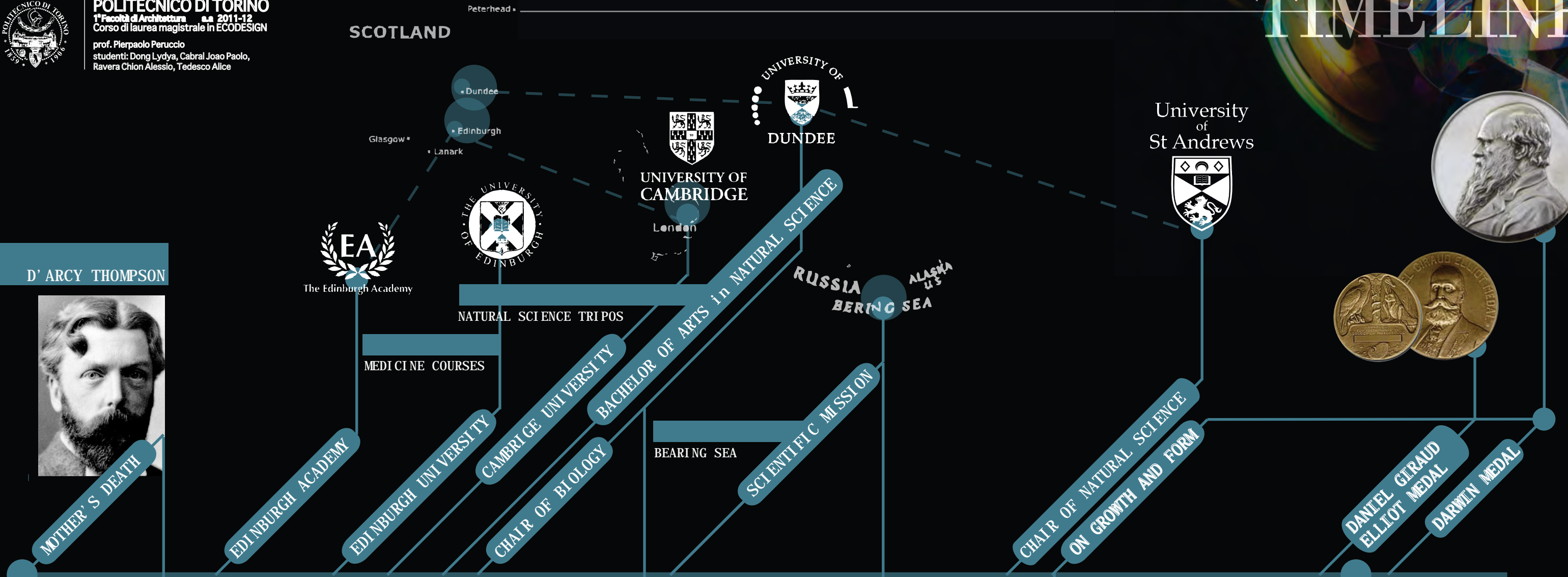


ALL COULD ONLY
BE UNDERSTOOD
IN TERMS
OF PURE
MATEMATICS.

1942
DEATH

DANIEL GIRAUD
ELLIOT MEDAL

DARWIN MEDAL





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ON GROWTH AND FORM

ON GROWTH AND FORM

The Complete Revised Edition



D'Arcy Wentworth Thompson

“The work brought him intellectual fulfillment and professional recognition, and it has become a scientific and literary classic, second only to Darwin’s works “
About the *new edition of the Natural History*:

His intellectual roots lay in the time seeing no distinction between different branches.

Is there an **underlying unity** to nature?

Can we discern **patterns** running through life’s diversity?

Are there **rules that** might **explain these** patterns?

are these rules inevitable product of

constant forces and conditions?

And can these be **expressed in** the language of
mathematics, physics, and chemistry?





ON GROWTH AND FORM

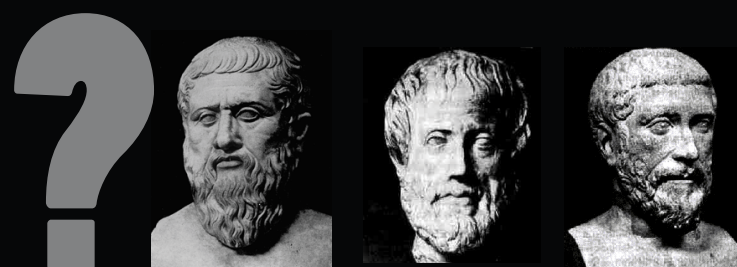
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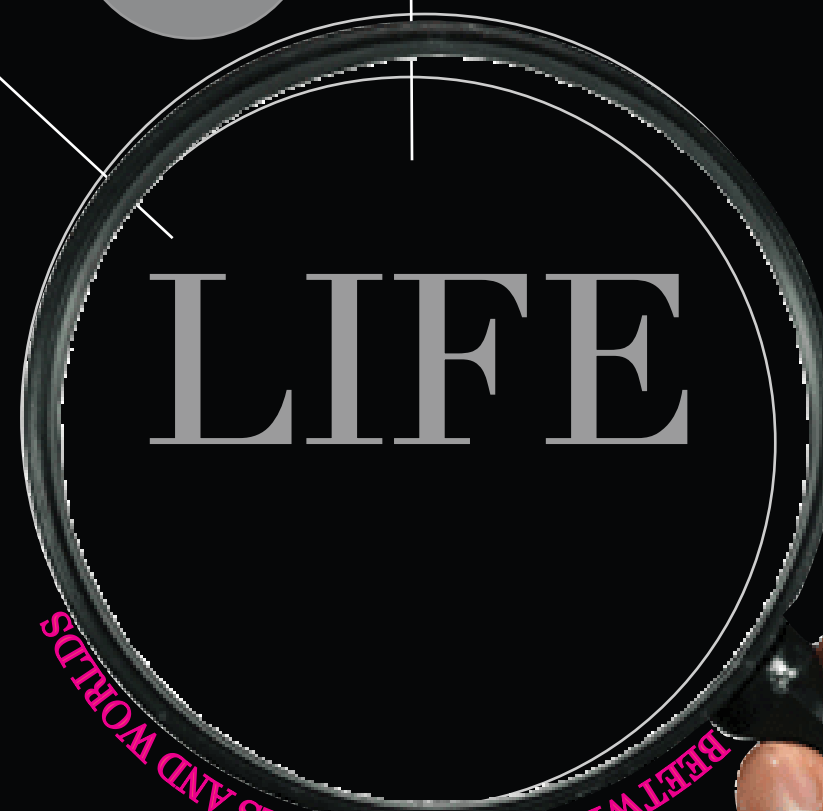


IGNORANCE
AS CURIOSITY

EMPIRIC
DIMENSION

Sameness
DIFFERENTS SPHERES
OF INVESTIGATION

UNCONVENTIONAL ANALYSIS METHOD



BETWEEN DIFFERT SKILLS AND WORLDS

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ON GROWTH AND FORM The Complete Revised Edition



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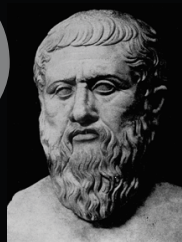
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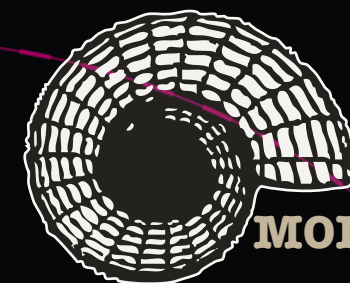
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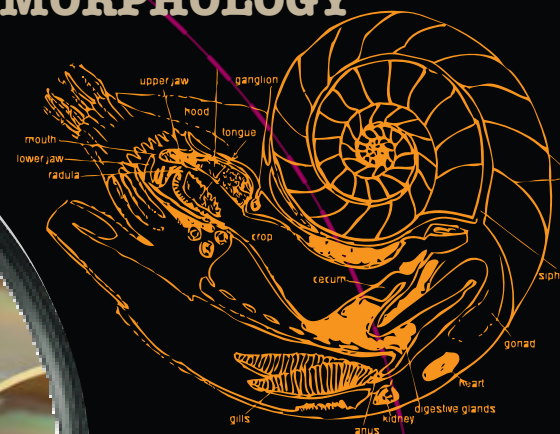
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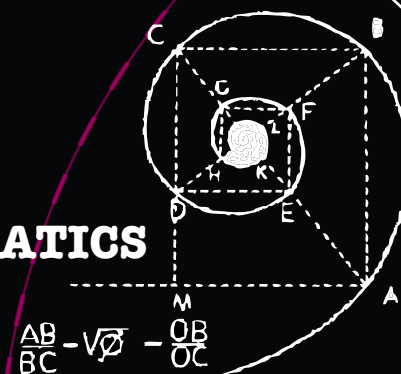


MORPHOLOGY

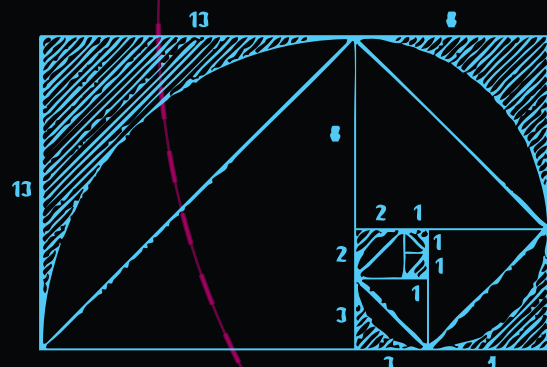


**ZOOLOGY
BIOLOGY**

MATHEMATICS



GEOMETRY



PHYSICS



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ON GROWTH AND FORM

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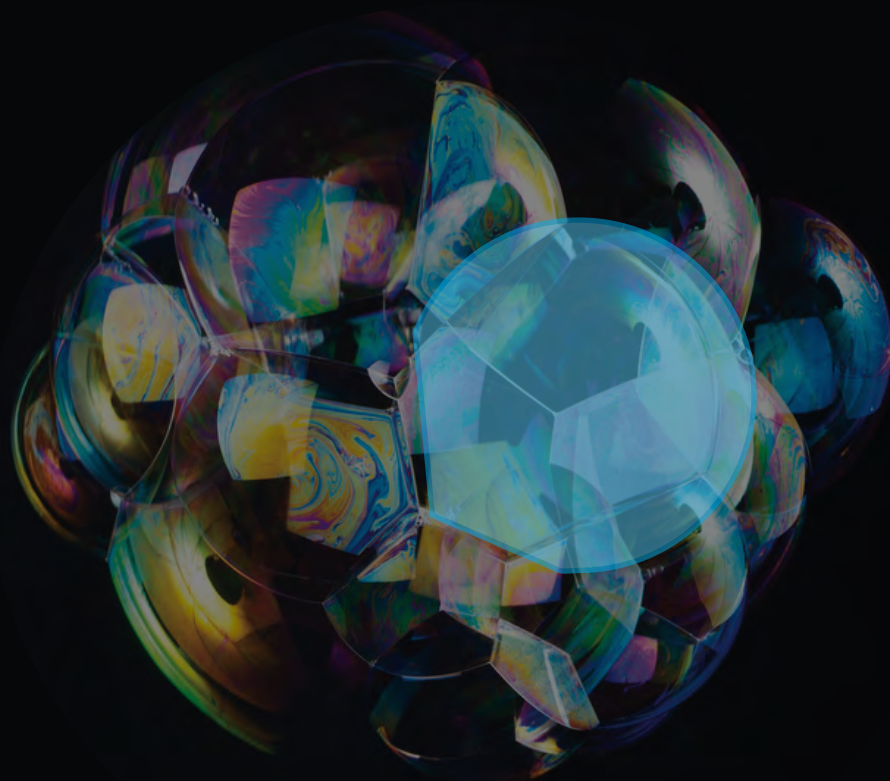
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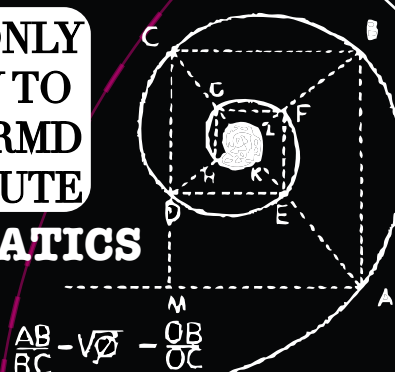


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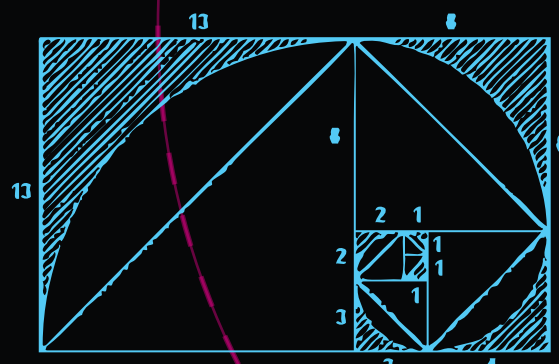
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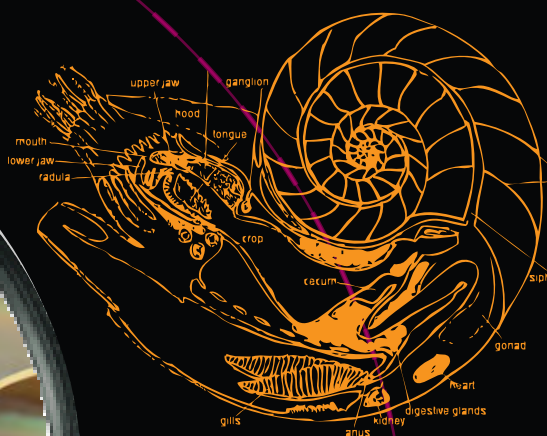
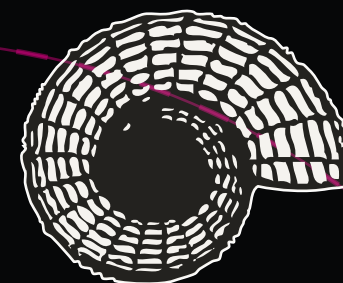


GEOMETRY



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BIOLOGY ZOOLOGIY



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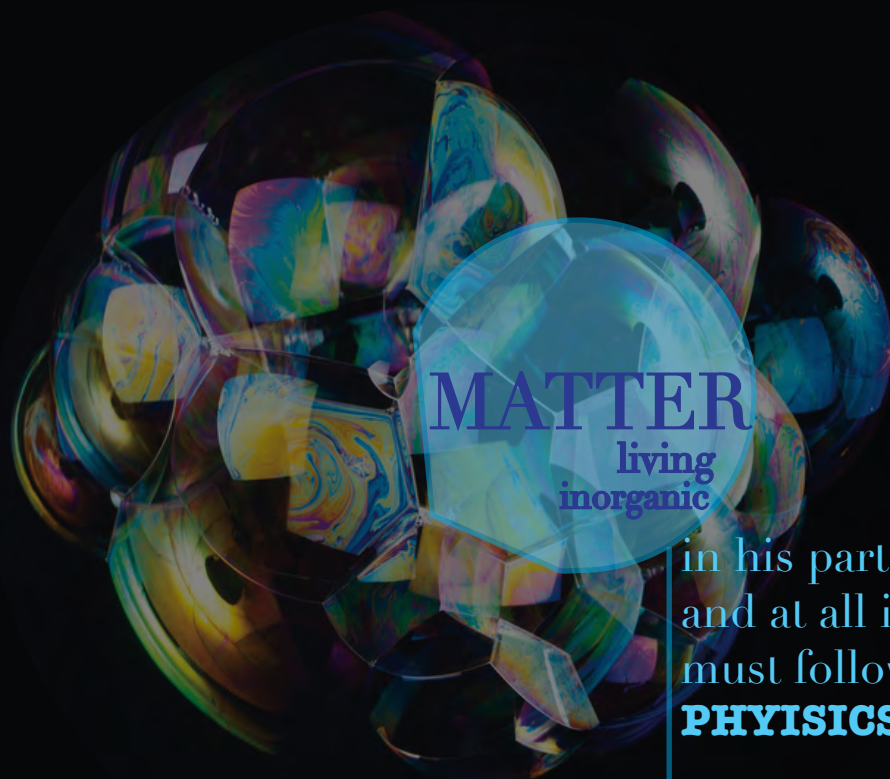
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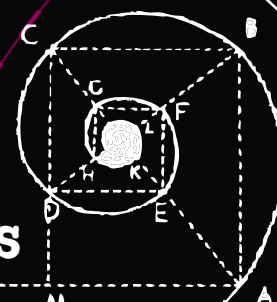
MATTER
living
inorganic

in his parts
and at all it
must follow
PHYSICS

**EMPIRIC
DIMENSION**

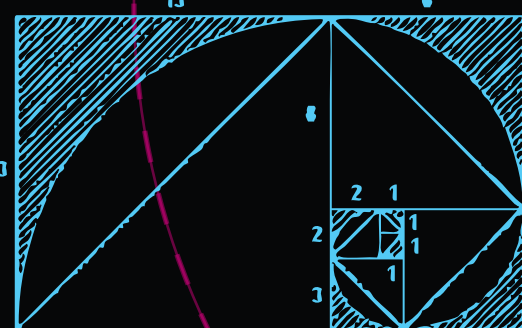
same
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$$\frac{AB}{BC} = \sqrt{2} = \frac{OB}{OC}$$

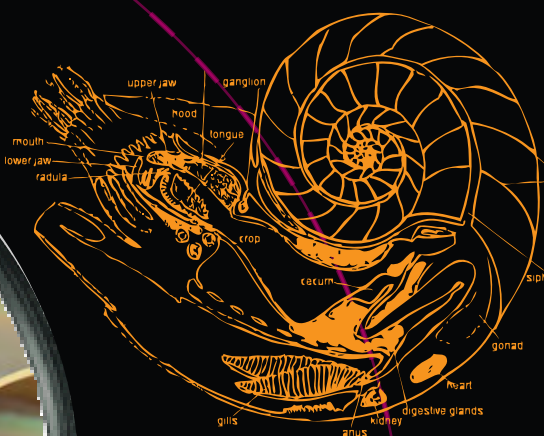
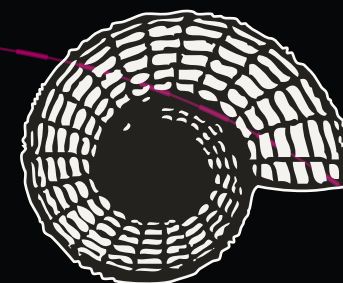
GEOMETRY



PHYSICS

the only
**TEACHER
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ANALYSIS METHOD



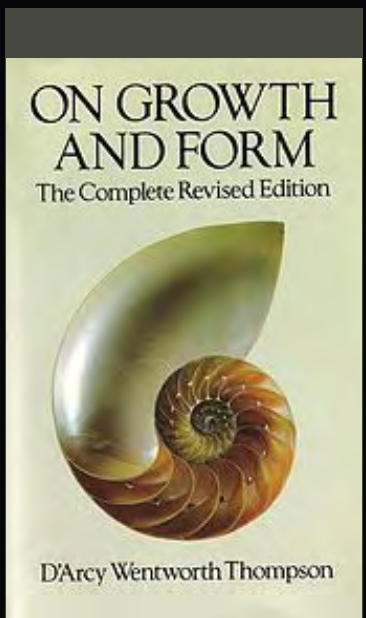
**BIOLOGY
ZOOLOGY**



BETWEEN DIFFERENT SKILLS AND WORLDS



ON GROWTH AND FORM



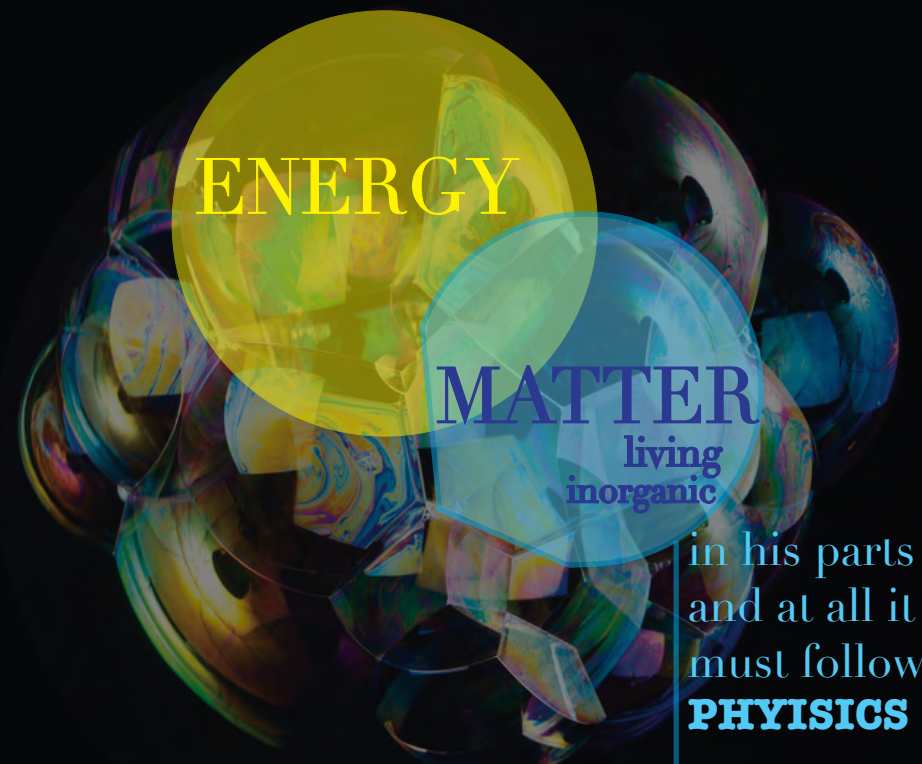
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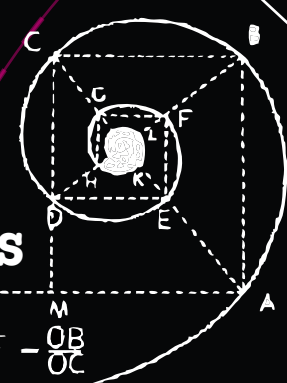


in his parts and at all it must follow **PHYSICS**

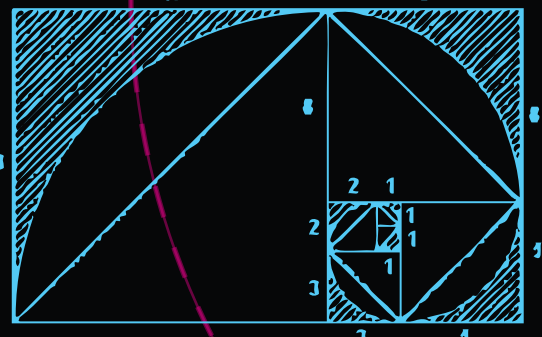
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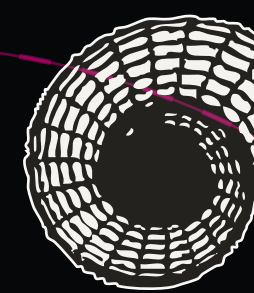
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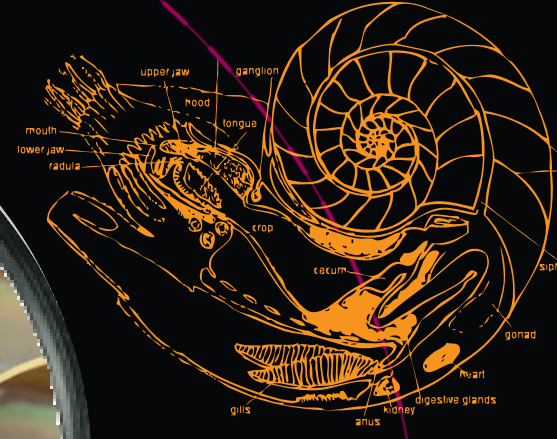
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ANALYSIS METHOD



" its dynamical aspect, under which we deal with the interpretation ... of the operations of **ENERGY**."

MORPHOLOGY

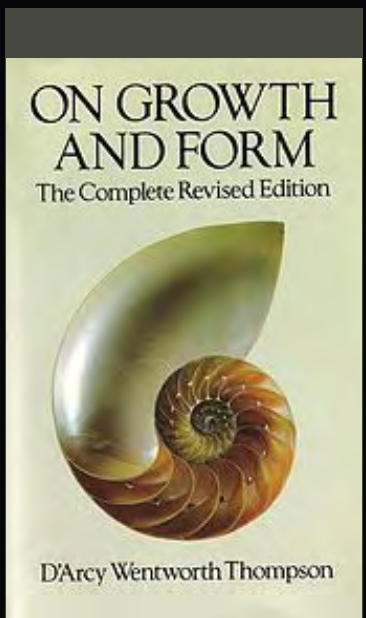


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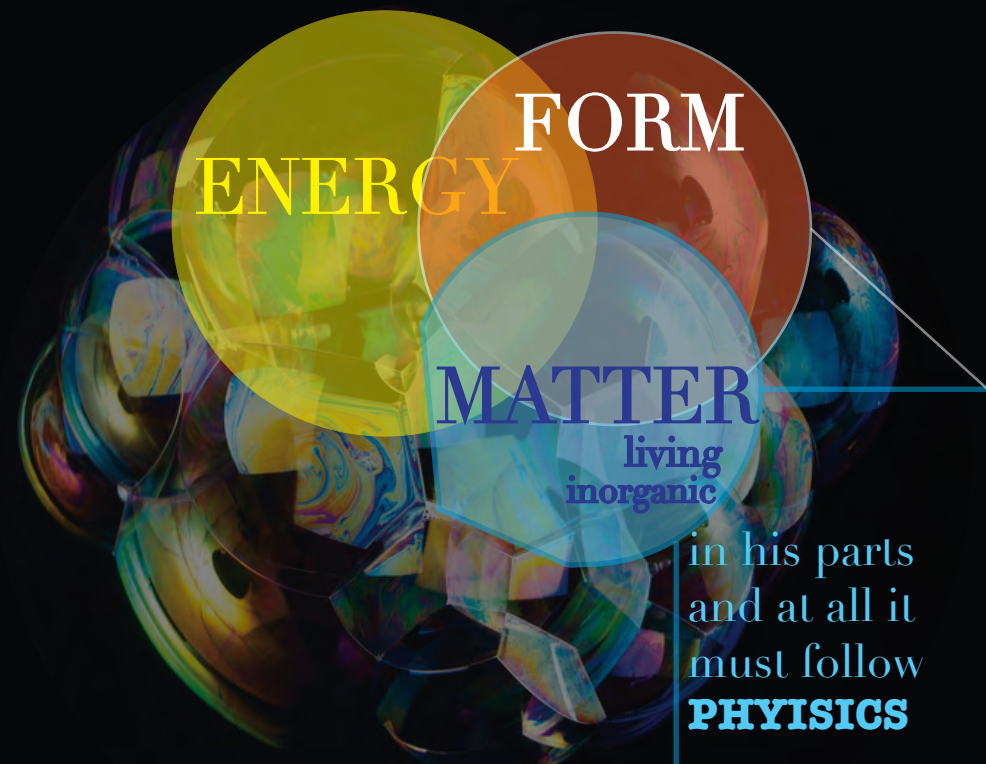
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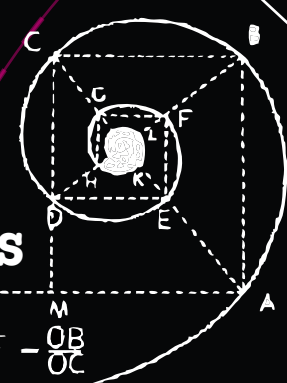


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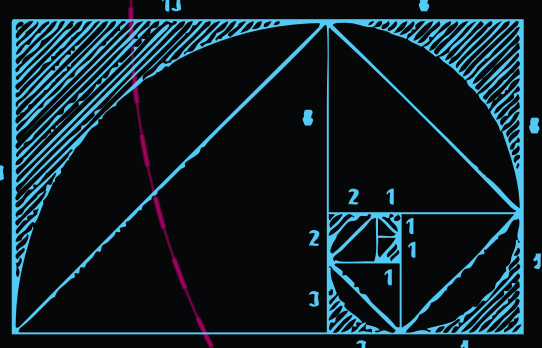
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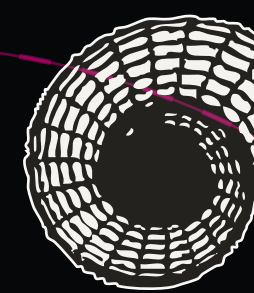
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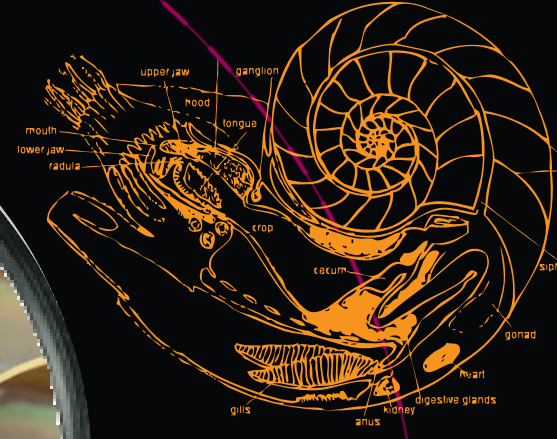
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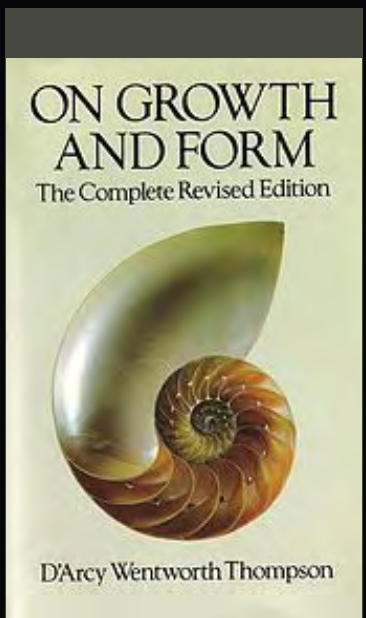


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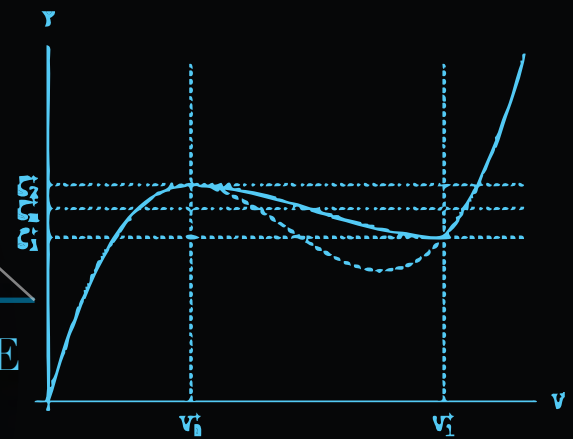
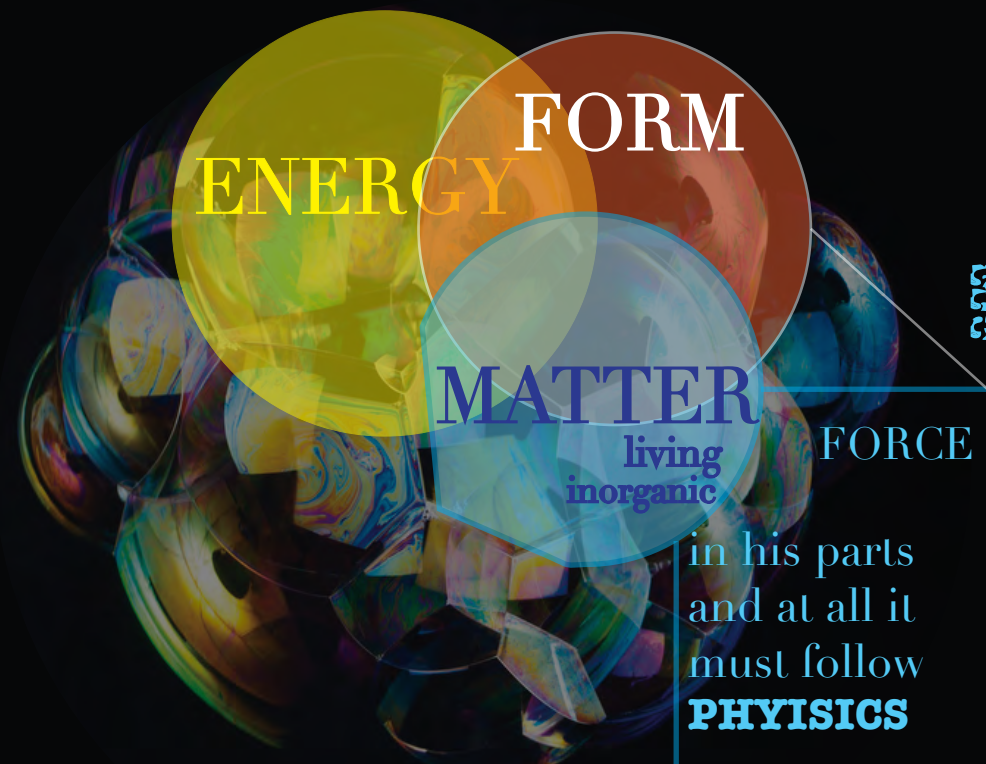
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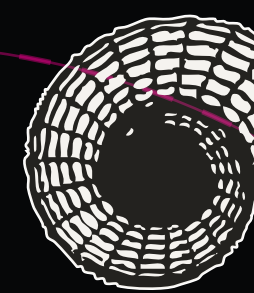
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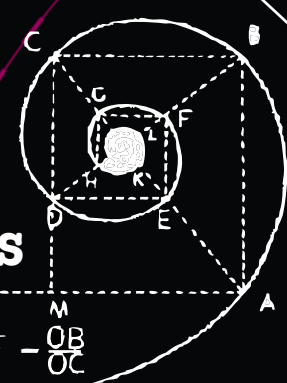


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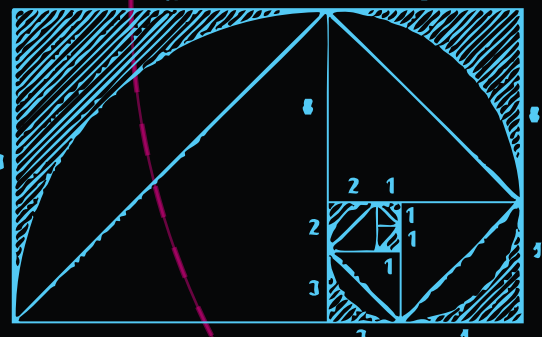
ἐντροπία
(en, "in" + tropē, "a turning")

EVOLUTION

IS THE ONLY WAY TO CONFIRM OR TO REFUTE MATHEMATICS



GEOMETRY



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BETWEEN DIFFERENT SKILLS AND WORLDS

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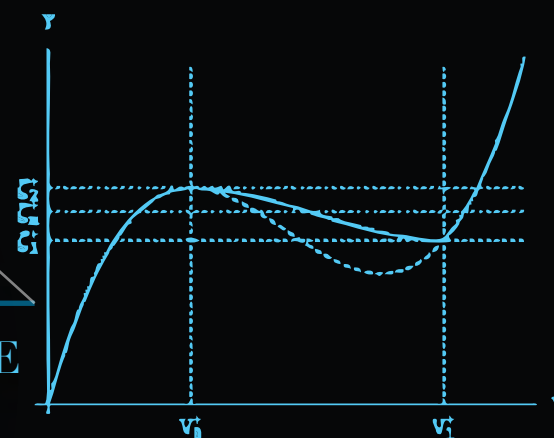
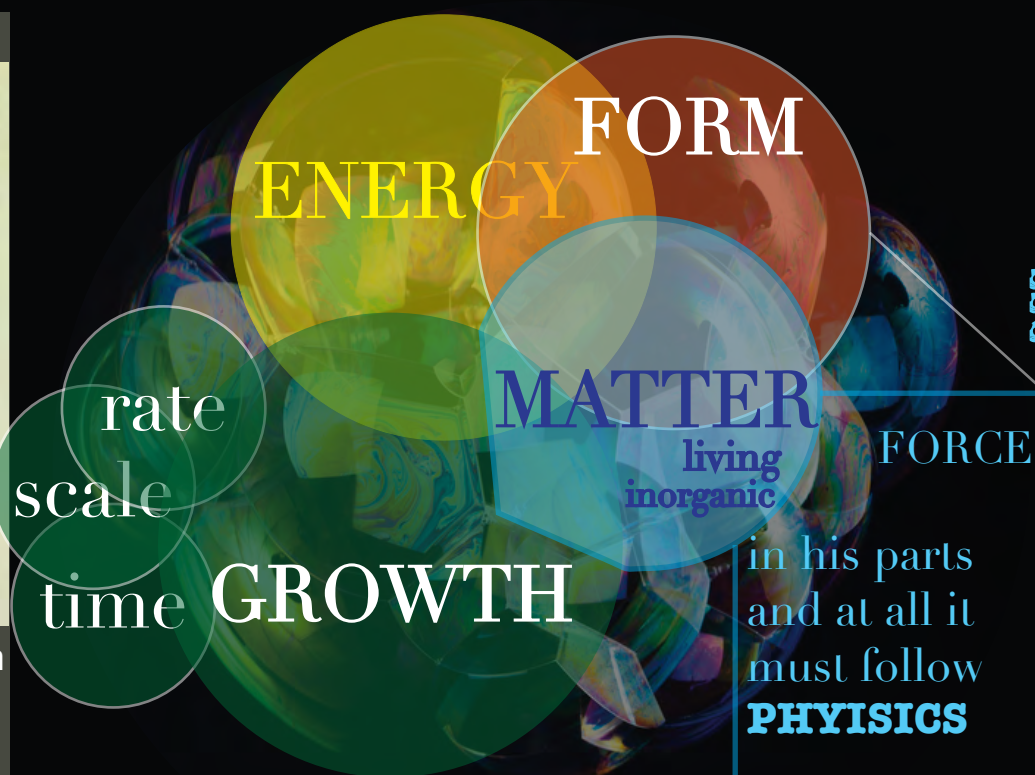
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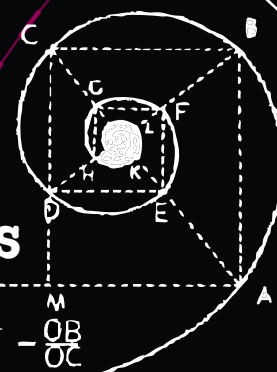
sameness

DIFFERENTS SPHERES OF INVESTIGATION

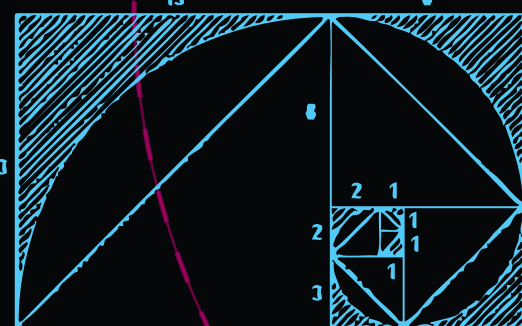
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ἐντροπία
(en, "in" + tropê, "a turning")

IS THE ONLY WAY TO CONFIRM OR TO REFUTE **MATEMATICS**



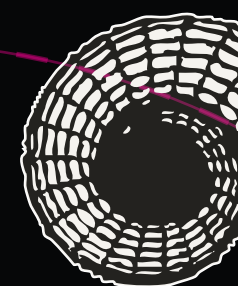
GEOMETRY



PHYSICS

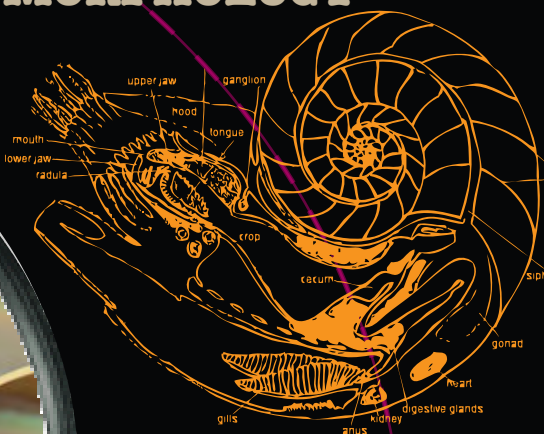
EVOLUTION

the only **TEACHER & GUIDE**



" its dynamical aspect, under which we deal with the interpretation ... of the operations of **ENERGY**."

MORPHOLOGY



BIOLOGY ZOOLOGY



BETWEEN DIFFERENT SKILLS AND WORLDS



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1^a Facoltà di Architettura
Corso di laurea magistrale in ECODESIGN

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ON GROWTH AND FORM

ON GROWTH AND FORM

The Complete Revised Edition



D'Arcy Wentworth Thompson

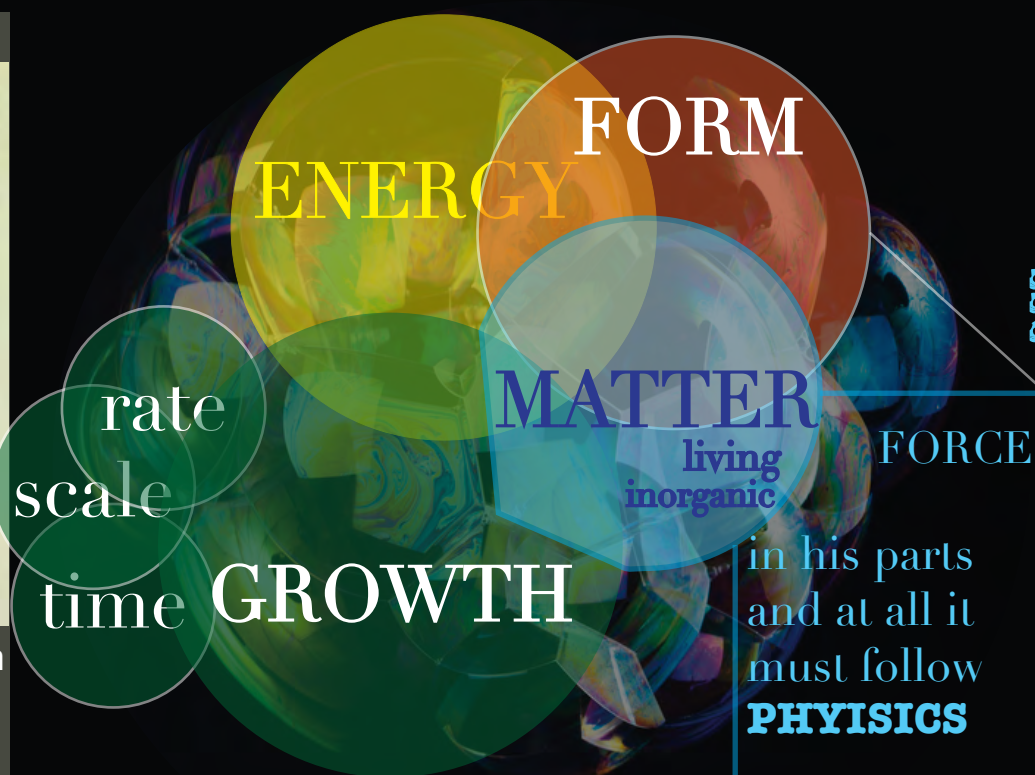
"The work brought him intellectual fulfillment and professional recognition, and it has become a scientific and literary classic, second only to Darwin's works " About the *new edition of the Natural History*:

His intellectual roots lay in the time seeing no distinction between different branches.

underlying unity patterns through life's diversity rules that can explain these as

constant forces and conditions

expressed in mathematics physics, and chemistry



rate
scale
time

GROWTH

MATTER
living
inorganic

FORM

ENERGY

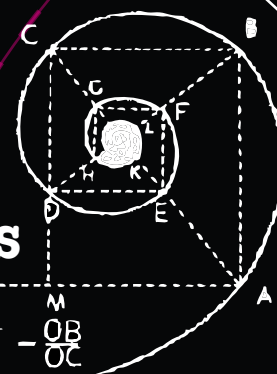
FORCE

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and at all it
must follow
PHYSICS

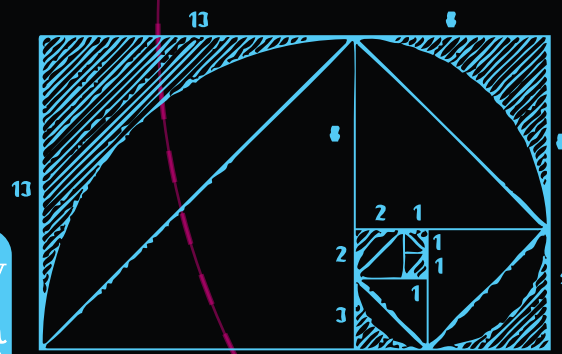
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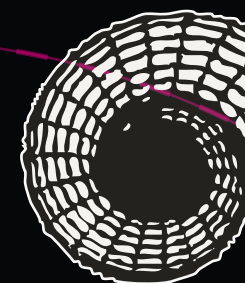


GEOMETRY



PHYSICS

ANALYSIS METHOD



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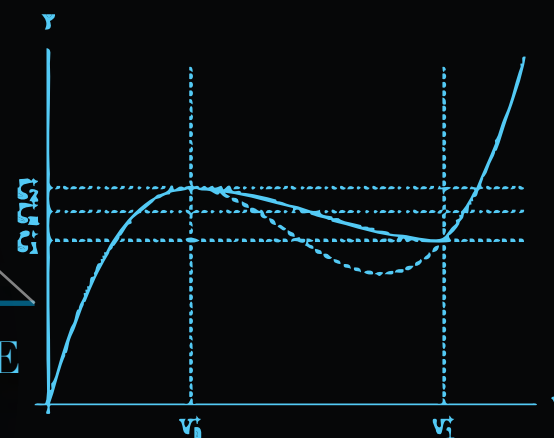
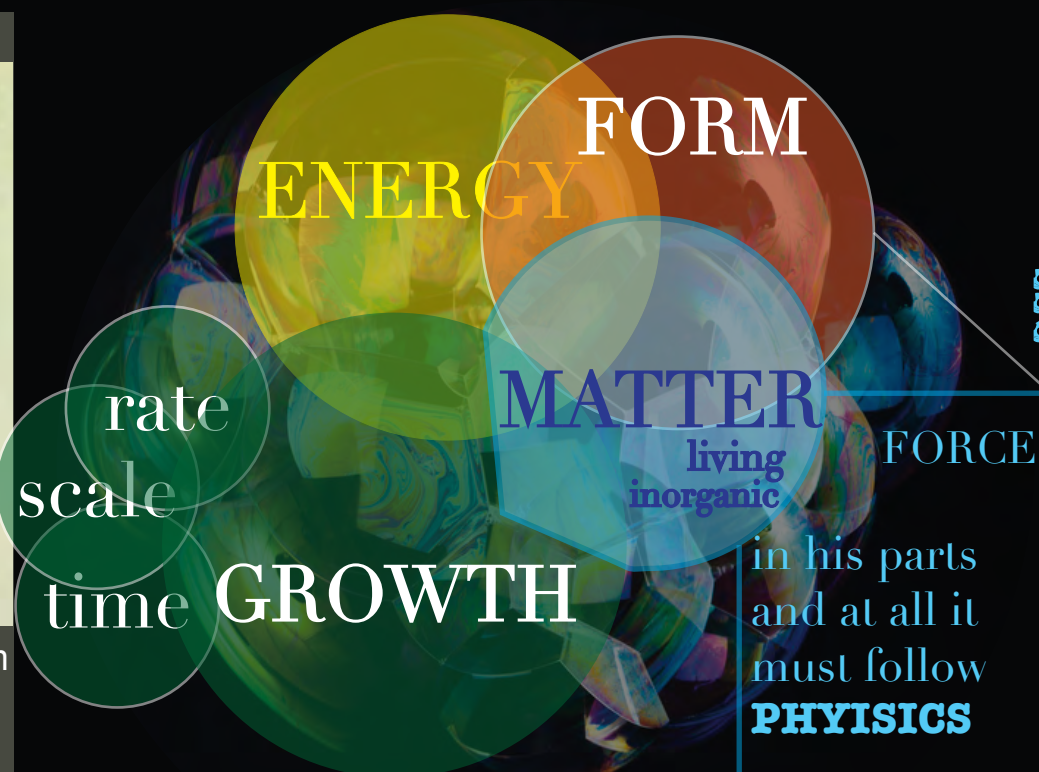
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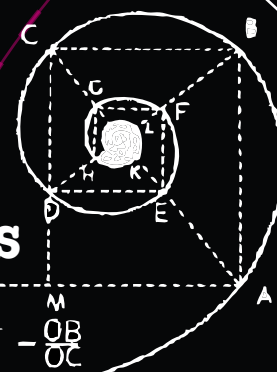
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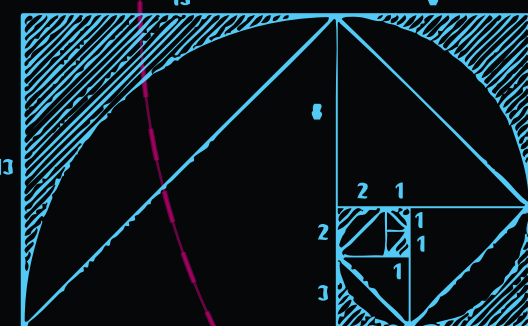
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about SOAP BUBBLES

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materialization of a mathematical law.
but a drop of oil or a soap film can
materialize in an instant all the result of our
calculations, our whole system of curves.*





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**If we divide a soap bubble in two bubbles the volume is diminished
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Frei Otto (1925)

Munich Olympic Stadium (1975)