

Tisočletje likovne umetnosti skozi oči fizike

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Growth and structure of Slovenia's scientific collaboration network

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ABSTRACT

We study the evolution of Slovenia's scientific collaboration network from 1960 till present with a yearly resolution. For each year the network was constructed from publication records of Slovene scientists, whereby two were connected if, up to the given year inclusive, they have coauthored at least one paper together. Starting with no more than 30 scientists with an average of 1.5 collaborators in the year 1960, the network to date consists of 7380 individuals that, on average, have 10.7 collaborators. We show that, in spite of the broad myriad of research fields covered, the networks form “small worlds” and that indeed the average path between any pair of scientists scales logarithmically with size after the largest component becomes large enough. Moreover, we show that the network growth is governed by near-linear preferential attachment, giving rise to a log-normal distribution of collaborators per author, and that the average starting year is roughly inversely proportional to the number of collaborators eventually acquired. Understandably, not all that became active early have till now gathered many collaborators. We also give results for the clustering coefficient and the diameter of the network over time, and compare our conclusions with those reported previously.



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Zipf's law and log-normal distributions in measures of scientific output across fields and institutions: 40 years of Slovenia's research as an example[☆]

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h-Index

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ABSTRACT

Slovenia's Current Research Information System (SICRIS) currently hosts 86,443 publications with citation data from 8359 researchers working on the whole plethora of social and natural sciences from 1970 till present. Using these data, we show that the citation distributions derived from individual publications have Zipfian properties in that they can be fitted by a power law $P(x) \sim x^{-\alpha}$, with α between 2.4 and 3.1 depending on the institution and field of research. Distributions of indexes that quantify the success of researchers rather than individual publications, on the other hand, cannot be associated with a power law. We find that for Egghe's *g*-index and Hirsch's *h*-index the log-normal form $P(x) \sim \exp[-a \ln x - b(\ln x)^2]$ applies best, with *a* and *b* depending moderately on the underlying set of researchers. In special cases, particularly for institutions with a strongly hierarchical constitution and research fields with high self-citation rates, exponential distributions can be observed as well. Both indexes yield distributions with equivalent statistical properties, which is a strong indicator for their consistency and logical connectedness. At the same time, differences in the assessment of citation histories of individual researchers strengthen their importance for properly evaluating the quality and impact of scientific output.

Community Structure and the Evolution of Interdisciplinarity in Slovenia's Scientific Collaboration Network

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Abstract

Interaction among the scientific disciplines is of vital importance in modern science. Focusing on the case of Slovenia, we study the dynamics of interdisciplinary sciences from 1960 to 2010. Our approach relies on quantifying the interdisciplinarity of research communities detected in the coauthorship network of Slovenian scientists over time. Examining the evolution of the community structure, we find that the frequency of interdisciplinary research is only proportional with the overall growth of the network. Although marginal improvements in favor of interdisciplinarity are inferable during the 70s and 80s, the overall trends during the past 20 years are constant and indicative of stalemate. We conclude that the flow of knowledge between different fields of research in Slovenia is in need of further stimulation.

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osnovno, napredno ...

STORITVE
bibliografski kazalci ...

PRIJAVA
vnos podatkov ...

OBVESTILA
novice, faq ...

O SICRIS-U
osnovne informacije ...

 **SICRIS / javni dostop**



SICRIS - informacije
o raziskovalni dejavnosti
v Sloveniji

**Bibliografski kazalci uspešnosti
za izvolitev v naziv**

Vrednotenje skupine izbranih
raziskovalcev

Najuspešnejši raziskovalci

Najuspešnejše skupine

Objave v najuglednejših
publikacijah

COBISS/SciMet

Dokumenti, baze in sezname

RAZISKOVALCEV

15610

ORGANIZACIJ

992

RAZISKOVALNIH SKUPIN

1579

AKTIVNIH PROJEKTOV

613

AKTIVNIH PROGRAMOV

331

 23.05.2018

Raziskovalcem je omogočena pooblaščená prijava v sistem SICRIS, na podlagi katere lahko sami spreminjajo tiste svoje podatke, ki niso pridobljeni iz evidenc ARRS (npr. telefon, faks, spletni naslov, klasifikacija CERIF, ključne besede, reprezentativna bibliografija, znanje tujih jezikov, avdiovizualni viri, biografski podatki, ORCID).

Podrobnosti o načinu in postopku pooblaščené prijave v SICRIS (**PRIJAVA/Dostop preko elektronske pošte, PRIJAVA/Pooblaščen dostop**) ter o spreminjanju podatkov raziskovalca so na voljo na strani [OBVESTILA/Pogosta vprašanja](#) (gl. "Kakšen je postopek spremembe podatkov o raziskovalcu v sistemu SICRIS?").

Tisočletje likovne umetnosti skozi oči fizike



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ARTWORK OF THE DAY



HOME

ARTISTS

Art movements

Schools and groups

Genres

Fields

Nationalities

Centuries

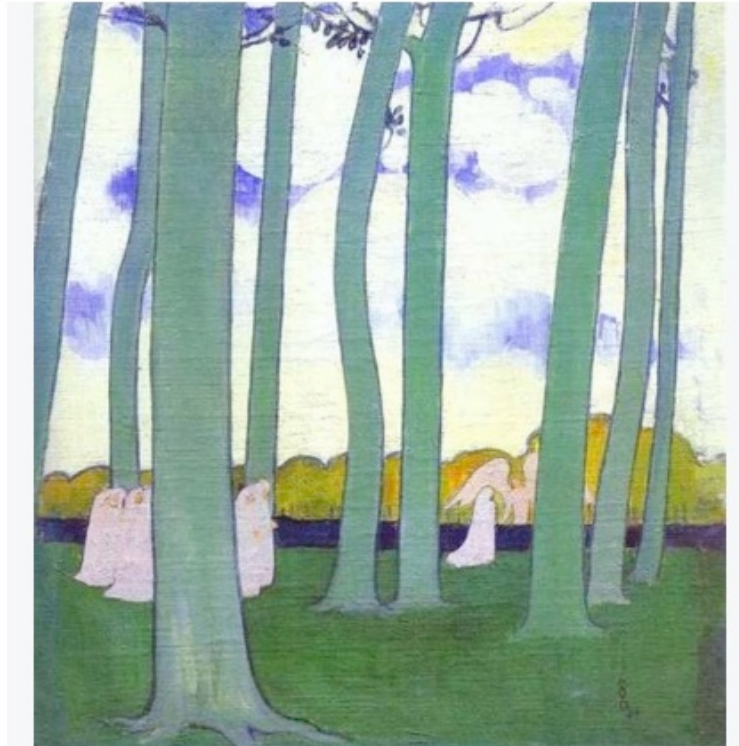
Art institutions

ARTWORKS

Styles

Genres

Media



Landscape with Green Trees or Beech Trees in Kerduel

Maurice Denis · 1893

In The Green Trees, the landscape in Loctudy (that is also to be found in a contemporary painting, Young Girls Picking Flowers by the Sea, formerly in the collection of the symbolist poet Georges Rodenbach) is used as the setting for a dreamlike ceremony in which a young girl steps out of a procession to meet an angel from which she is separated by a short wall; this is a dramatised allegory of the Calling or of the Election in a magic forest, that of Kerduel where one must not forget the famous King Arthur would have lived. Maurice

ARTWORK DETAILS

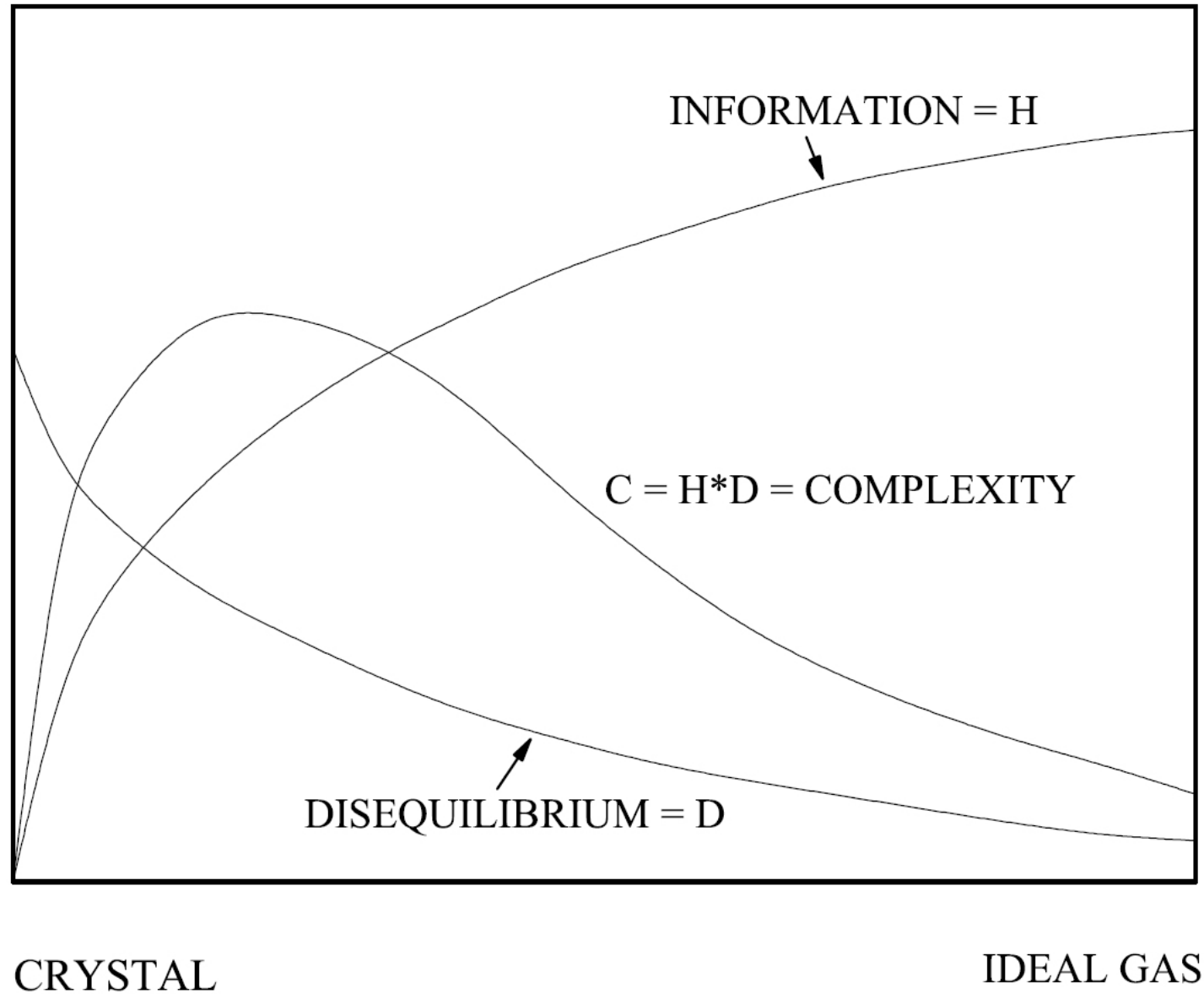


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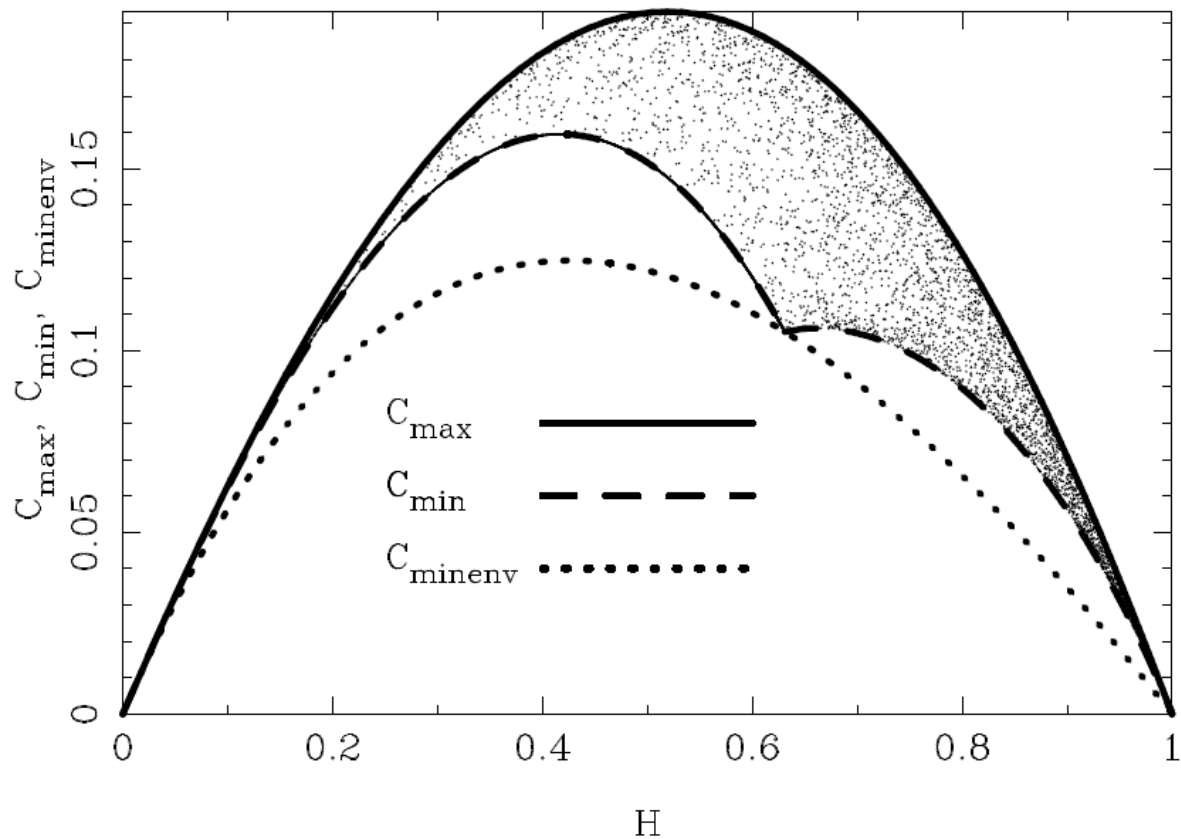


Entropija in kompleksnost

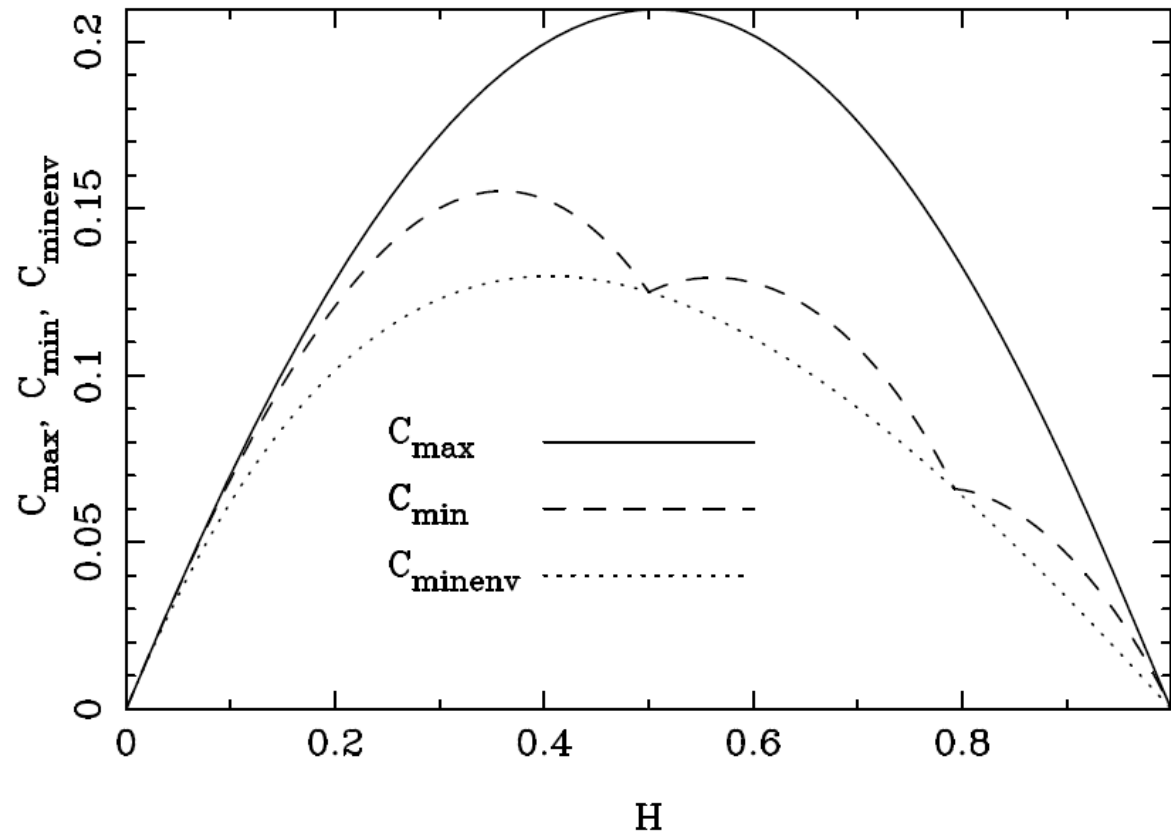


Entropija in kompleksnost

$N = 3$



$N = 4$



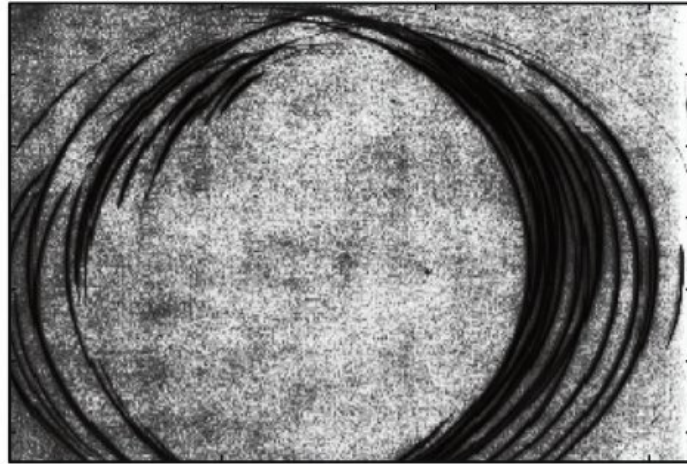
$$C = H \cdot D = - \left(K \sum_{i=1}^N p_i \log p_i \right) \cdot \left(\sum_{i=1}^N \left(p_i - \frac{1}{N} \right)^2 \right)$$

Likovna umetnost v luči entropije in kompleksnosti

D15



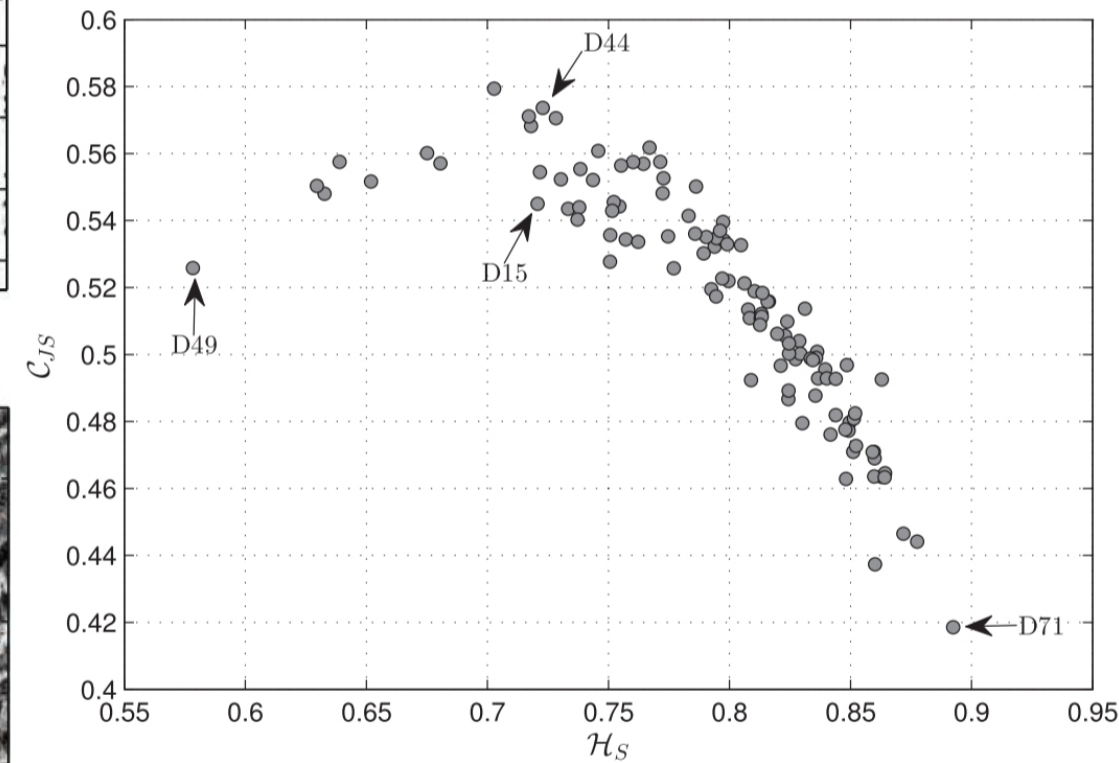
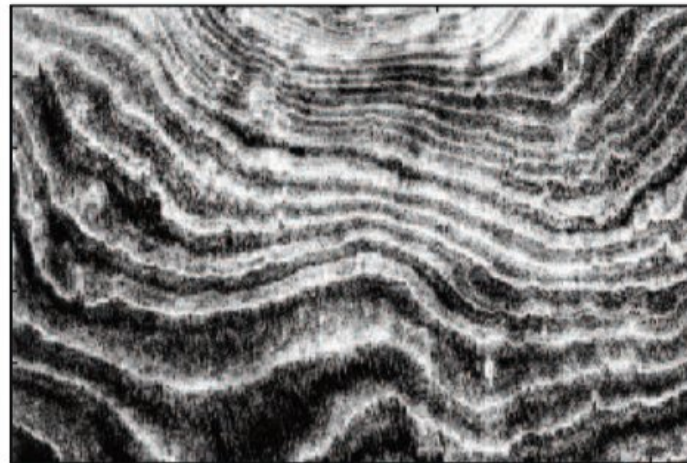
D44



D49



D71



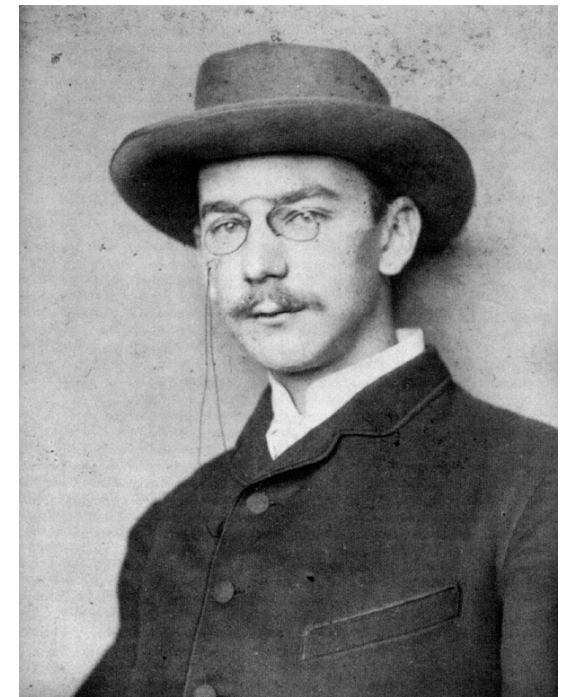
Zelo na kratko o likovni umetnosti

Alois Riegl (1858 -1905) avstrijski umetnosti zgodovinar. Pionir likovne umetnosti kot samostojne in samozadostne akademske discipline. Njegove teza je bila, da se umetnost razvija linearno od haptične proti optični.



Haptično zaznavanje
(Grško: haptós "utripajoče",
haptikós "primerno za dotik")
dobesedno pomeni sposobnost
"nekaj razumeti oziroma dojeti".

Heinrich Wölfflin (1864 -1945) švicarski umetnosti zgodovinar, ki je vpeljal linearnost in slikovitost kot objektivne klasifikatorje v likovni umetnosti, ki so omogočili razvoj formalne analize v zgodnjem 20. stoletju.



Povezava med likovno umetnostjo in fiziko

Haptično/Linearno

proti

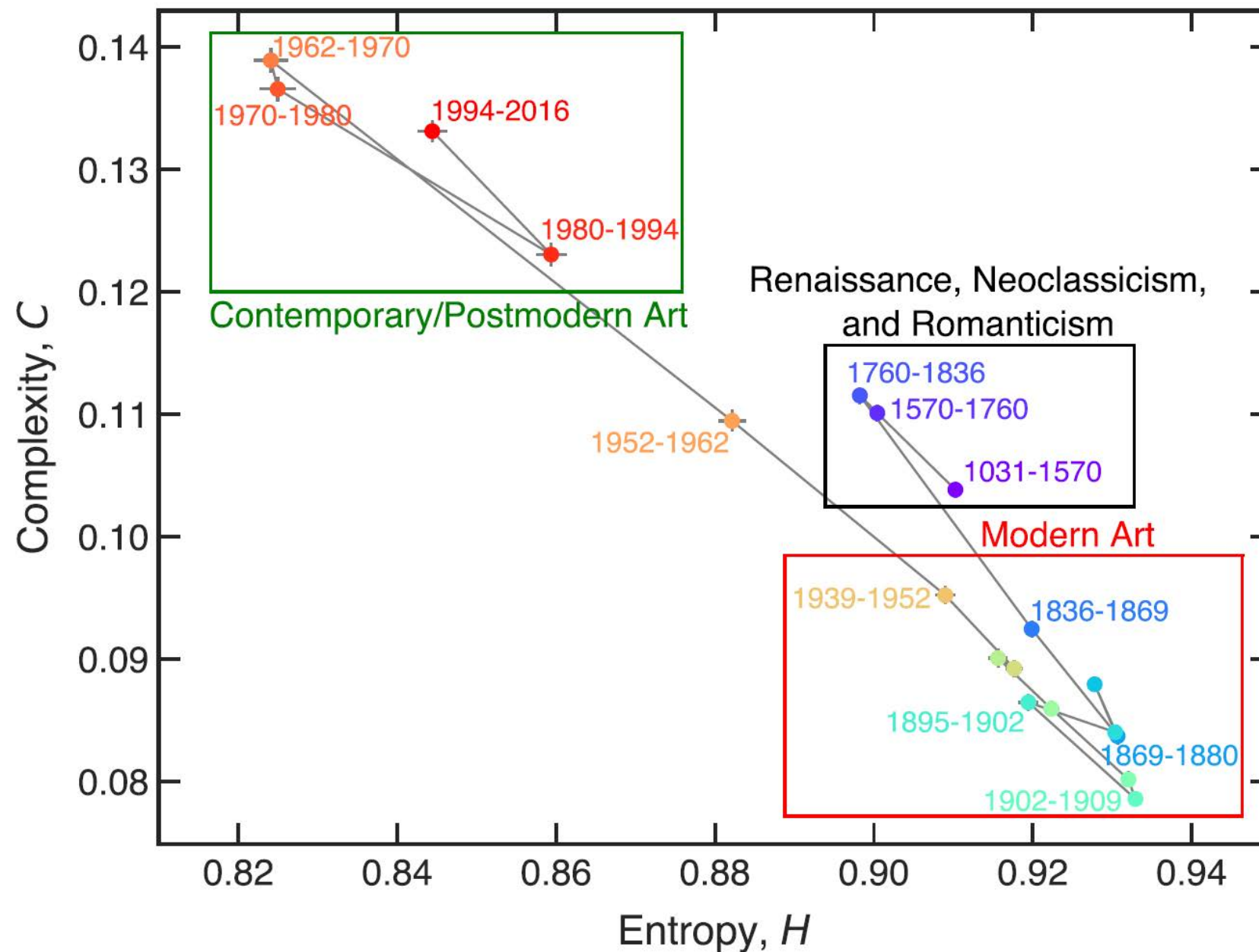
Optično/Slikovito

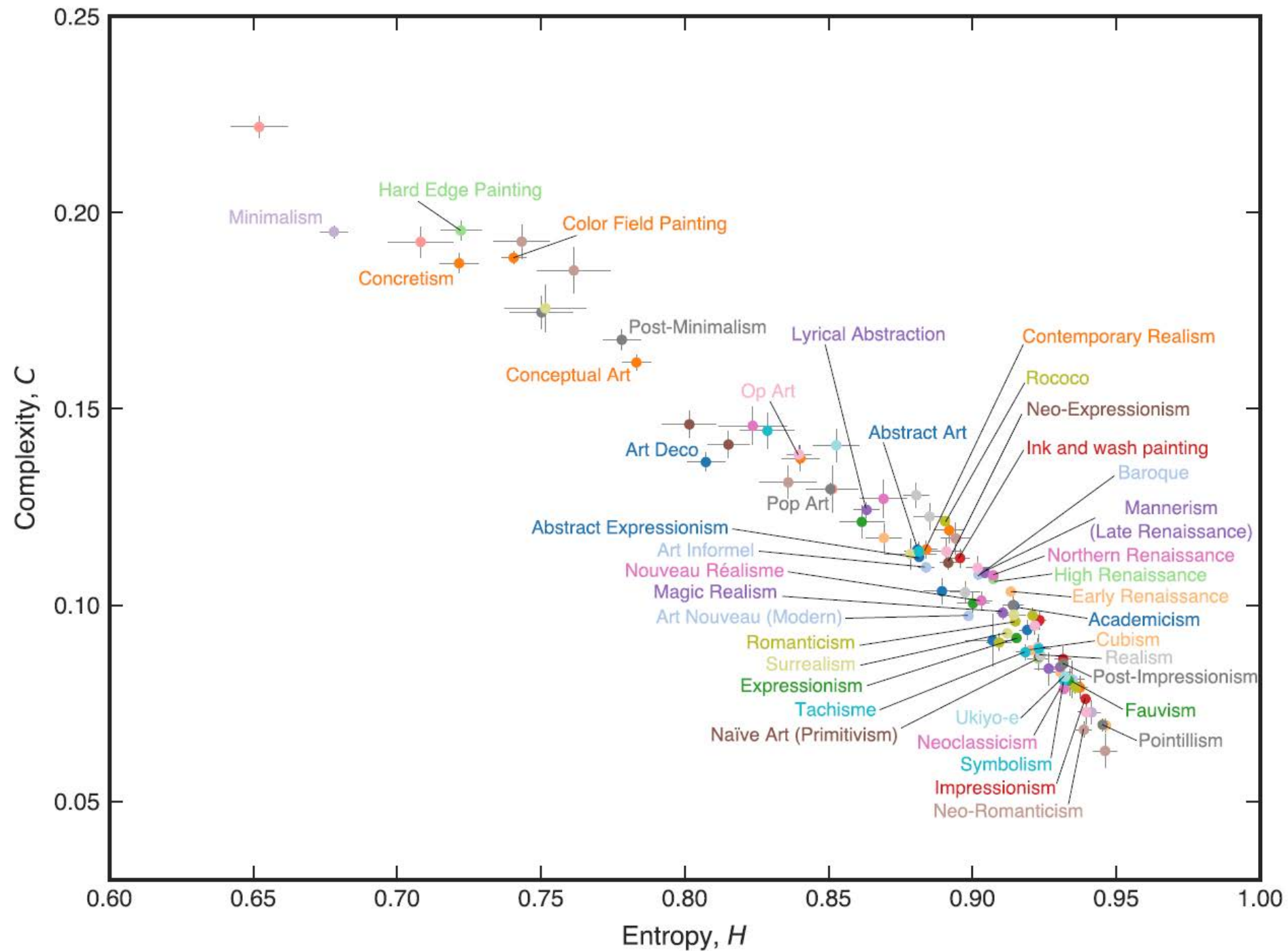
Red/Preprostost

proti

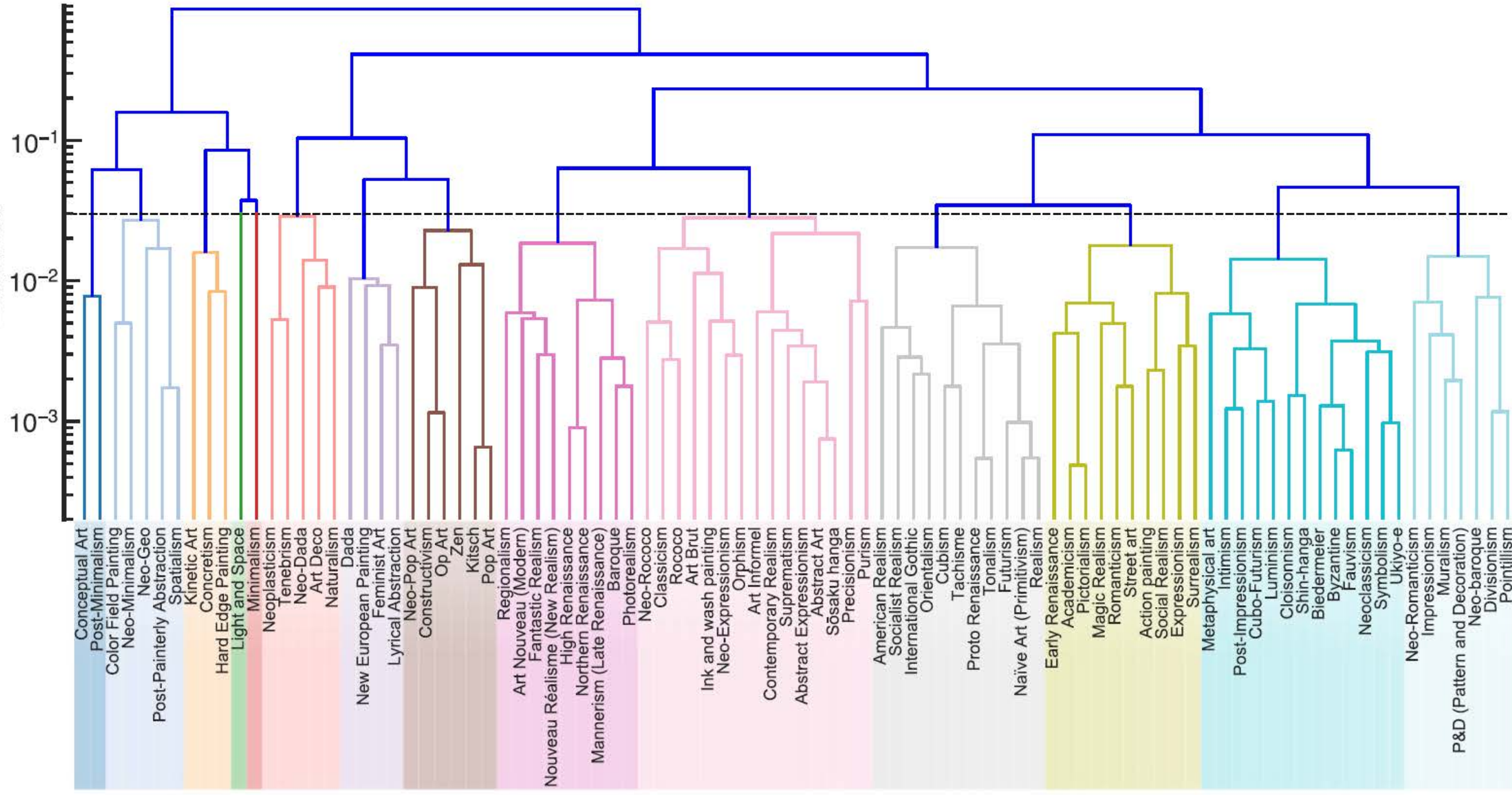
Nered/Kompleksnost

Tisočletje likovne umetnosti skozi oči fizike





Distance



Tisočletje likovne umetnosti skozi oči fizike

Referenca:

History of art paintings through the lens of entropy and complexity,
Higor Y. D. Sigaki, Matjaž Perc, and Haroldo V. Ribeiro,
Proc. Natl. Acad. Sci. U.S.A. **115**, E8585-E8594 (2018)
DOI: 10.1073/pnas.1800083115

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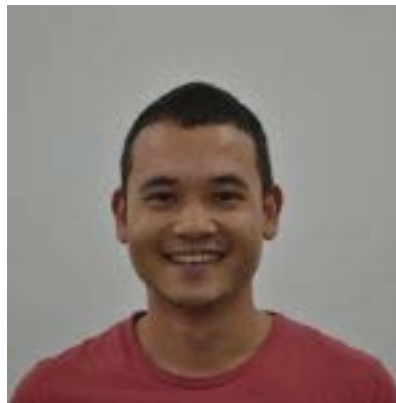


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V sodelovanju z:



Haroldo V. Ribeiro



Higor Y. D. Sigaki