

Digital Iconology

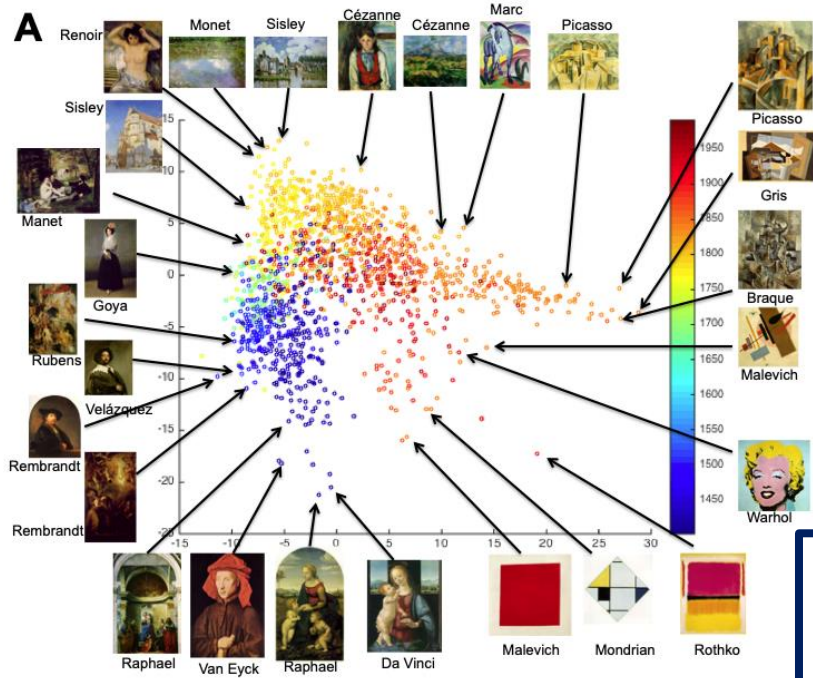
Classification and Association in Visual Knowledge Systems

Charles van den Heuvel
in collaboration with
Etienne Posthumus and Hans Brandhorst

AI and Artworks: Object Detection, Image Classification and
Iconographic Analysis
Austrian Academy of Sciences, Vienna 16-17 April 2025



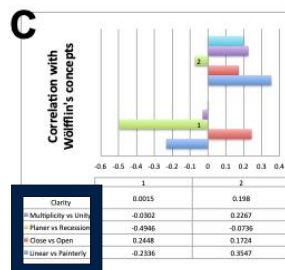
A.I. + Computer Vision Experiments



A. Elgammal e.a.
The Shape of Art History in the Eyes of the Machine
2018

Wölfflin's Principles of Art History (1915)

1. Linear and Painterly
2. Plane and Recession
3. Closed and Open Form
4. Multiplicity and Unity
5. Clearness and Unclearness



Das Mittelalter 2019; 24(1): 31-53

Peter Bell und Leonardo Impett Ikonographie und Interaktion. Computergestützte Analyse von Posen in Bildern der Heilsgeschichte

ICONCLASS Browse & Search

7 - Bible
73 - New Testament
73A - (scenes from the life of) John the Baptist and Mary
73AA52 - the Annunciation: Mary, usually reading, is visited by the angel (sometimes a woman overhears the conversation) - AA - Mary to the left, the angel to the right
[73AA521](#) the Annunciation: Mary standing - AA - Mary to the left, the angel to the right

Search with these related keywords:
New Testament, bible, standing

Add more detail:

- 73AA521(+0) · the Annunciation: Mary standing - AA - Mary to the left, the angel to the right (+ variant)
- 73AA521(+1) · the Annunciation: Mary standing - AA - Mary to the left, the angel to the right (+ Holy Trinity)
- 73AA521(+2) · the Annunciation: Mary standing - AA - Mary to the left, the angel to the right (+ Mary)
- 73AA521(+3) · the Annunciation: Mary standing - AA - Mary to the left, the angel to the right (+ angel(s))
- 73AA521(+4) · the Annunciation: Mary standing - AA - Mary to the left, the angel to the right (+ devil(s))
- 73AA521(+5) · the Annunciation: Mary standing - AA - Mary to the left, the angel to the right (+ donor(s), supplicant(s), whether or not with patron saint(s))

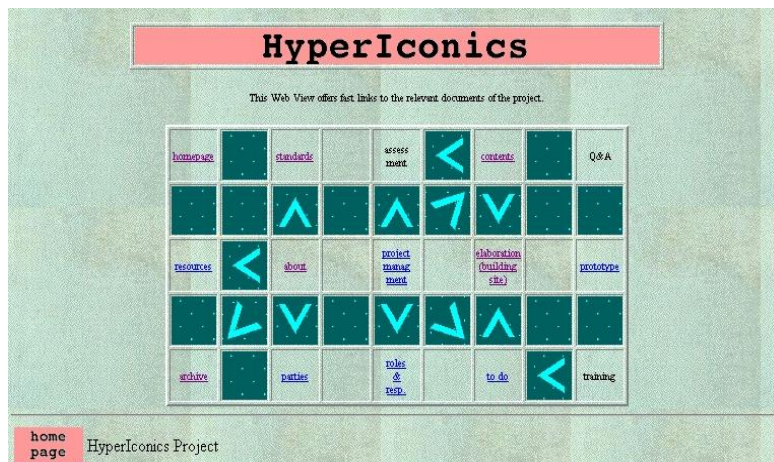
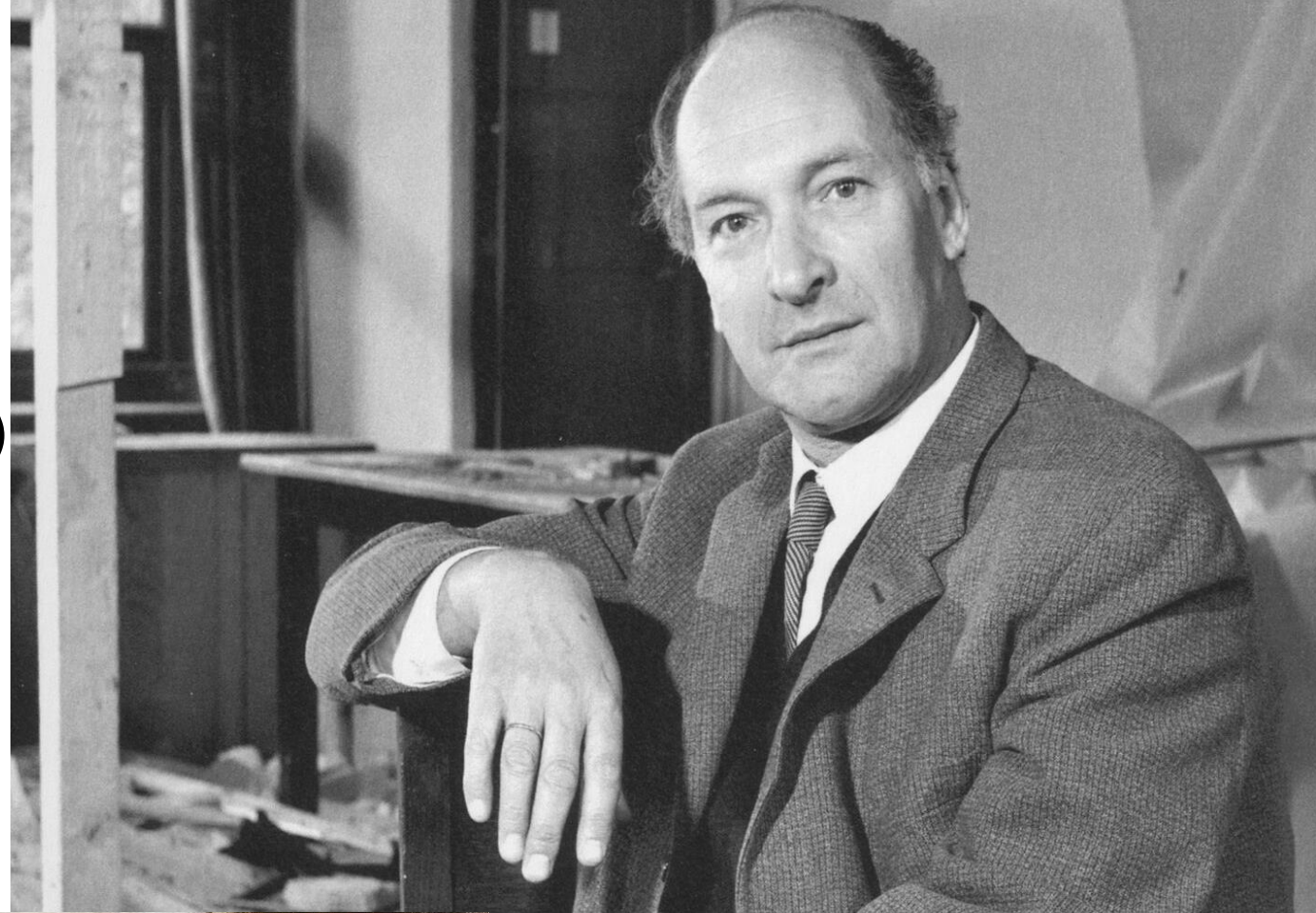
Figure 1: Modes of variations of the activation subspace showing smooth temporal transition and correlation with Wölfflin's concepts. (A) First and second modes of variations of the AlexNet+2 model with paintings color-coded by date of creation. The first mode (the horizontal axis) seems to correlate with figurative art, which was dominant till Impressionism, vs. non-figurative, distorted figures, and abstract art that dominate 20th century styles. Another interpretation for this dimension is that it reflects Wölfflin's concept of plane (to the right) vs. recession (to the left). This axis correlates the most with Wölfflin's concept of plane vs. recession with -0.50 PCC. The vertical axis correlates with the linear (towards the bottom) vs. painterly (towards the top) concept (0.36 PCC). (B) The angular coordinate exhibits strong correlation with time (PCC of 0.69). (C) Correlation with Wölfflin's concepts.

Statements about a.i and c.v. experiments in digital iconology

- Like the automated step by step approach of deep learning underlying a.i. and computer vision to recognize features and patterns in data that are more meaningful than other, our human reading of the produced results is a gradual process of understanding images in the context of our knowledge.
- Historical understanding of their initiatives of organizing and interacting with visual resources is useful for the digitization initiatives intended to support iconological research, i.e. digital iconology.
- Most visual knowledge systems have both characteristics of a hierarchical classification and the possibility to explore images in more associative ways

Henri van de Waal (1910-1972)

- Describing Prints Col. Bodel Nijenhuis 1938/39
- Beeldleer/Iconology (unpublished)- 1950s- 1972
- Hypericonics (Gerhard-Jan Nauta 1993)
- Decimal Index of Art of the Low Countries (D.I.A.L.) 1968 (Abridged version Iconclass)
- Iconclass since 1973 (first complete version)
- Iconclass "libertas" browser 1999-2000
- LOD-Iconclass as SKOS since 2015]
- Iconclass: bildGRID image content laboratory



ICONCLASS

Edit Start / BEELDLEER /

- 1 Introduction
- 2 Vision - Seeing
- 3 Form - matter and structure
- 4 Space
- 5 Semantics (reality 51-54; abstracta 55_6; program 57_8)
- 6 Functions of the icon
- 7 Valuation (appreciation, attributing values to forms of culture and artefacts)
- 8 Theory of style

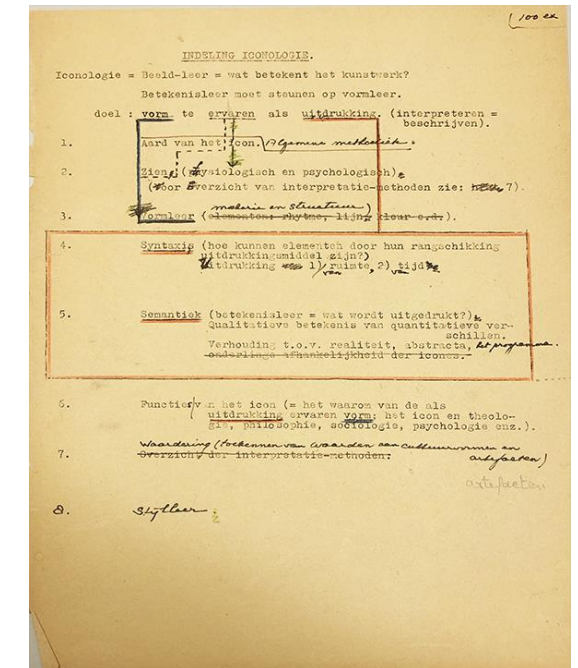
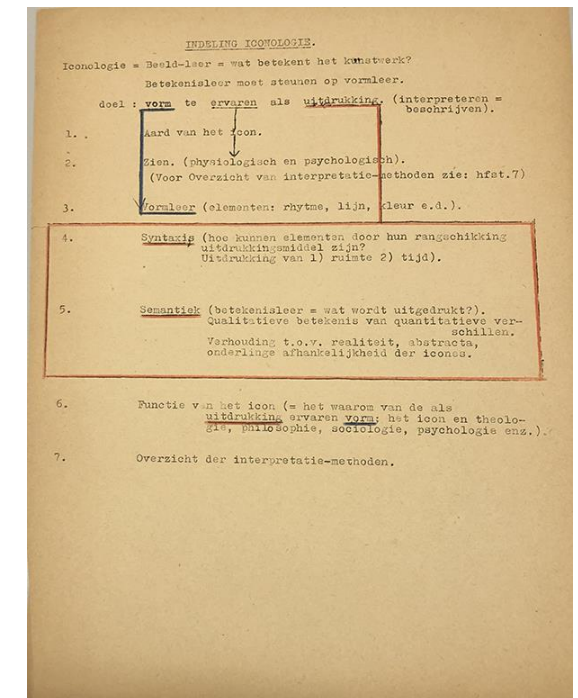
Division Iconology

Iconology = Beeldleer = What is the meaning of the artwork

Theory of Meaning must be supported by Theory of Form

Aim: to experience form as expression (interpretation is describing)

1. General methodology: nature of icon
2. Seeing (psychological and physiological)
3. Theory of Form (Matter and Structure)
4. Syntax (How can elements by their order be means of expression)
Expression 1) of space 2) of time
5. Semantics (Theory of Meaning = What is expressed?)
Qualitative meaning of quantitative differences
Relation to reality, abstracta, the program
6. Function of Icon (= Is the why of the as expression experienced form:
The icon and theology, philosophy, sociology, psychology etc.)
7. Valuation (assigning values to cultural forms and artefacts)
8. Theory of Style



Classifications Beeldleer (Iconology) and Iconclass compared

Pre-classification

2 Seeing physiological and psychological - 3 Form (Matter and Structure) - 4 Syntax

Observing and recognizing patterns for digital art history in general (browsing/serendipity- Arkyves)

Non-figurative/abstract art – extension of the 0 class in Iconclass

Classification

5 Semantics

- Extending Iconclass in particular with other classes for non-figurative and non-Christian and non-Western art

Post classification

1 General methodologies - 6 function of icon - 7 valuation -8 theory of style

- Art-historical and socio-cultural and cross-cultural contextualisation
- Mappings to external ontologies, classifications
- Navigation of existing systems

Warburg, Heckscher, Van de Waal explorations of visual forms/patterns and digital art history/ digital iconology

- **Natural/Organic Patterns:**

- These patterns are inspired by elements found in nature, such as the spiral of a seashell, the veins of a leaf, or the symmetry of a snowflake.

- **Man-Made Patterns:**

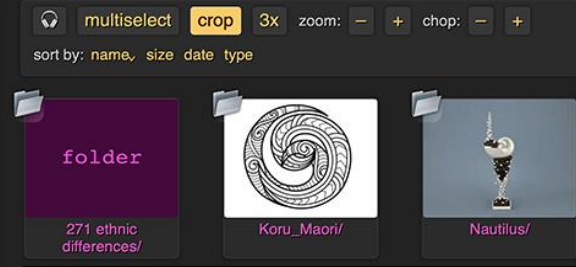
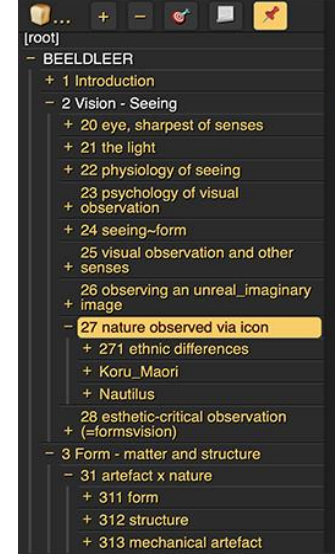
- **Geometric Patterns:** Made from precise shapes like squares, circles, and triangles.

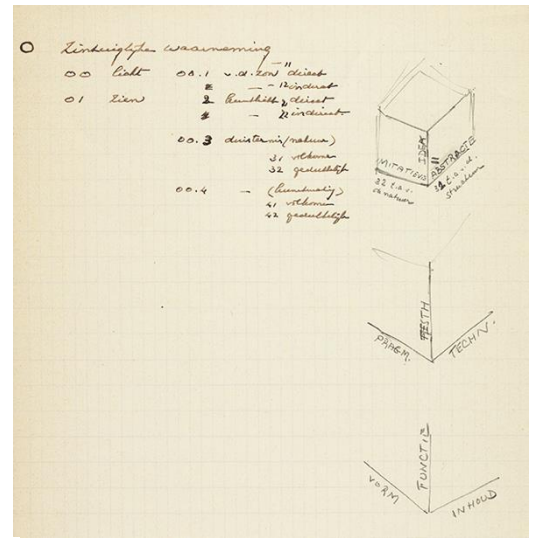
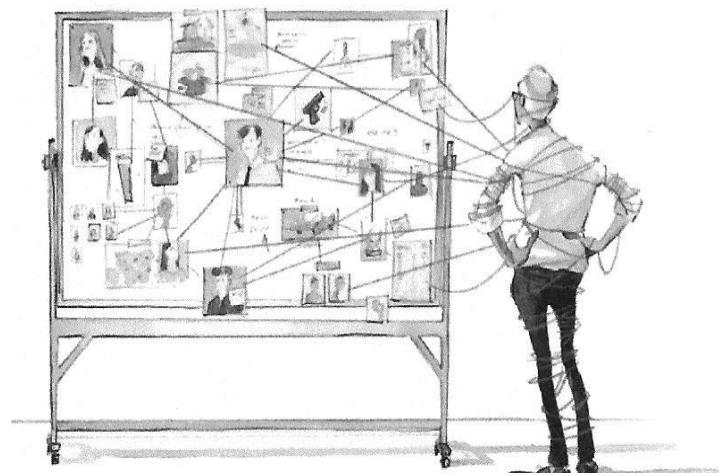
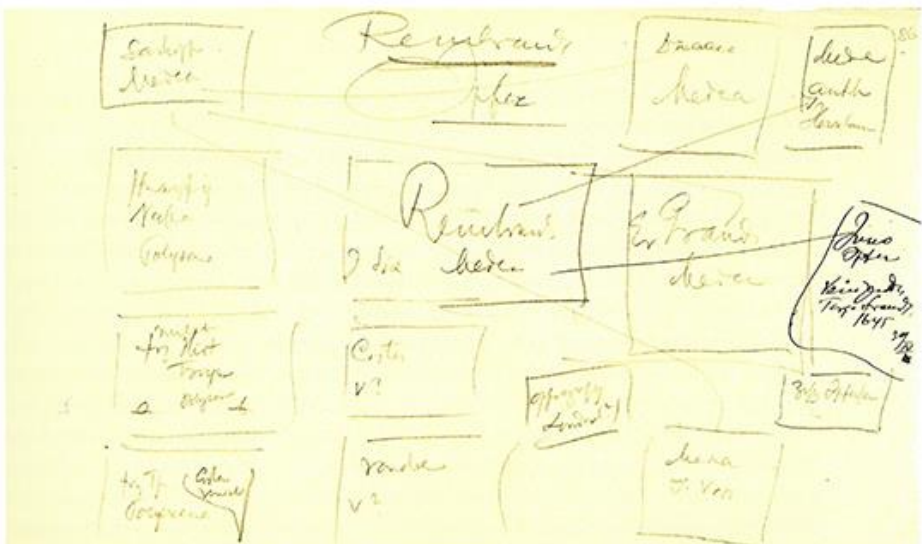
- **Irregular Patterns:** Characterized by a lack of predictability, though they may still contain repeated elements or motifs.

- **Regular vs. Irregular**

- **Structural vs. Decorative**

- **Symmetric vs. Asymmetric**





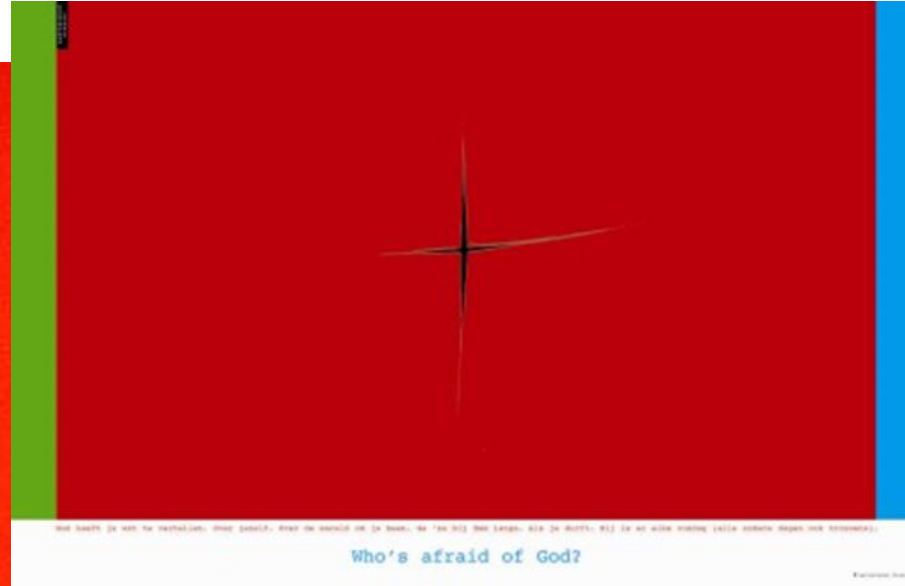
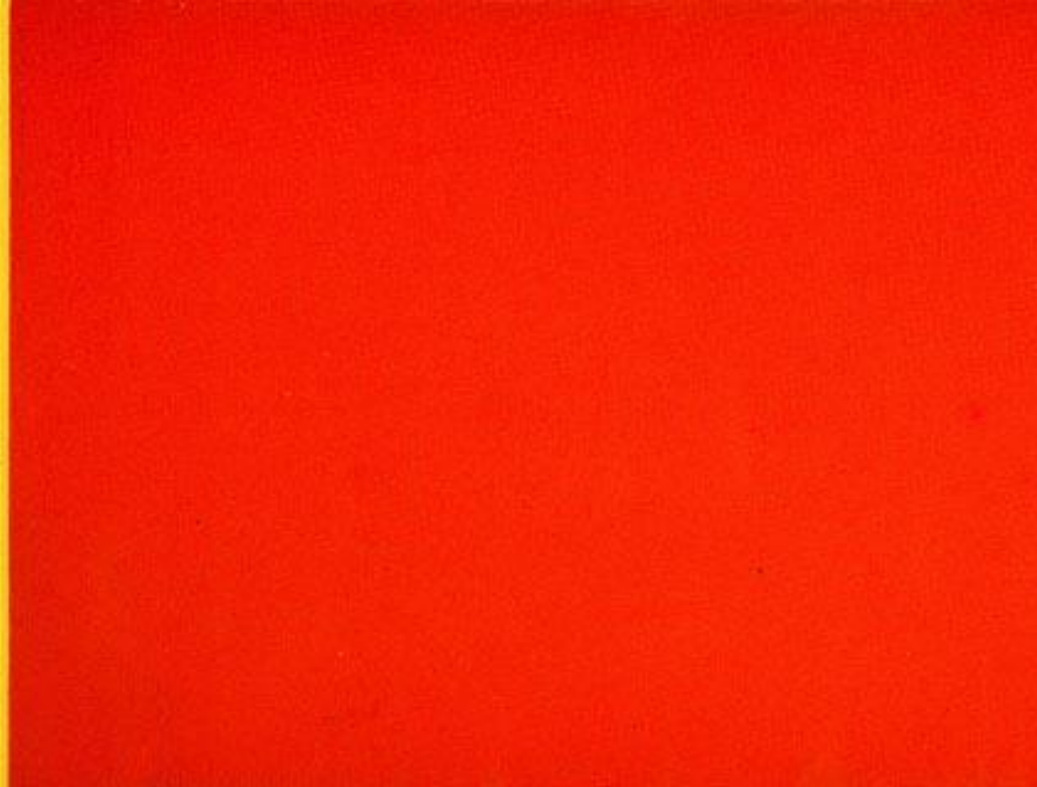
Warburg: "Zwischenraum: Denkraum der Besonnenheit"
 A thought space, a mental environment for careful reflection [1932]

Heckscher: I prefer to have the Index which has a life of its own, which may pride itself on being the child of imagination [1982]

Waal: "in composing my system for filing 'all the portrayable', I often felt inspired by the Dutch makers of nautical instruments. As such, a means for finding our way through the still greatly unmapped iconographical archipelagos and for their iconological exploration, I constructed this tool as a *globus iconographicus*. [conference Amsterdam 1952]

Interactions: Browsing and Navigation

A thought experiment on relations between abstract and figurative art revisited



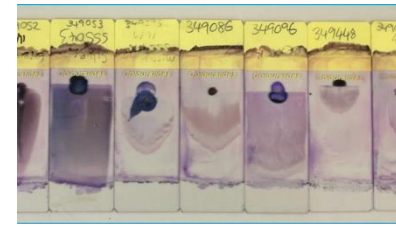
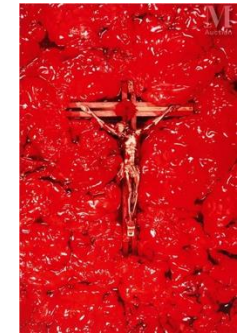
Barnett Newman – Who is afraid of Red, Yellow and Blue III – 1966-67



Matthew Paul Cleary, *Mysterium Magnum* 2009

C van den Heuvel, R. Smiraglia (2013), Visualizing Knowledge Interaction in the Multiverse of Knowledge. In *Proceedings of the International UDC Seminar 2013 Classification & Visualization, Interfaces to Knowledge* The Hague 24-25 October 2013, pp. 59-72.

associations with similarities in text and image

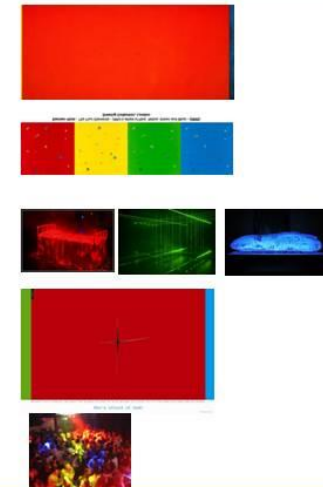


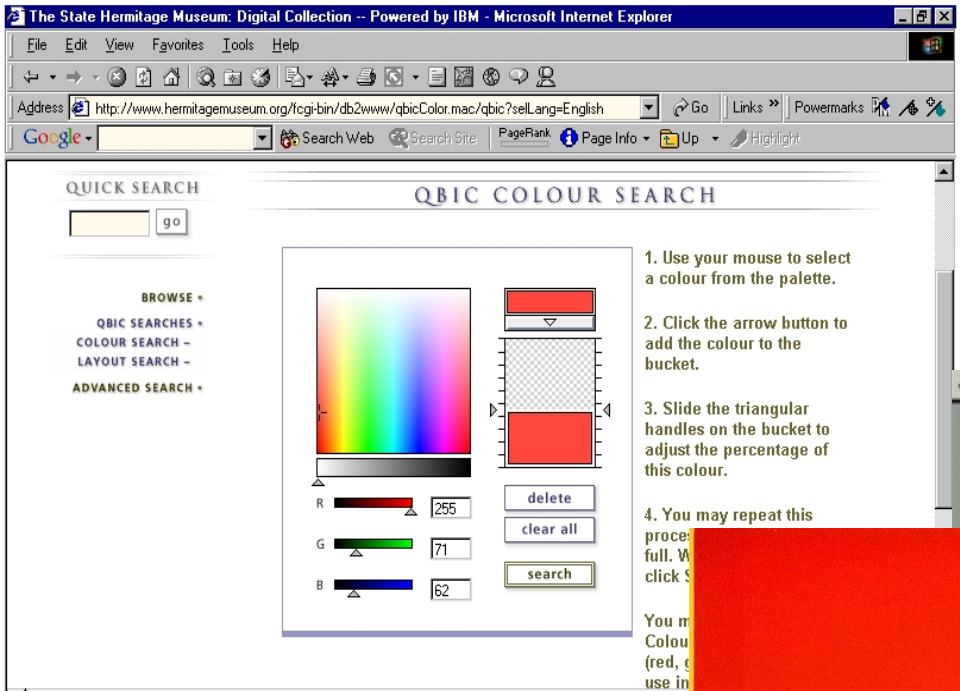
WHO IS AFRAID OF the Big Bad Wolf
 WHO IS AFRAID OF Virginia Woolf
 WHO IS AFRAID OF Red, Yellow and Blue
 WHO IS AFRAID OF Red, Yellow and Techno
 WHO IS AFRAID OF Red, Amber and Green
 WHO IS AFRAID OF God

WHO IS AFRAID OF
 WHO IS AFRAID OF

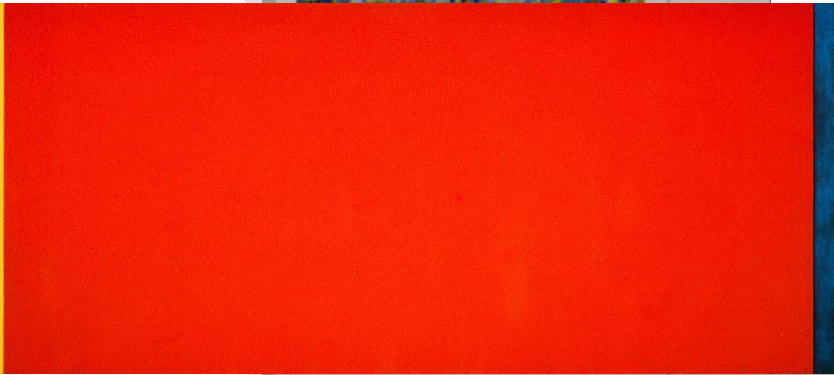
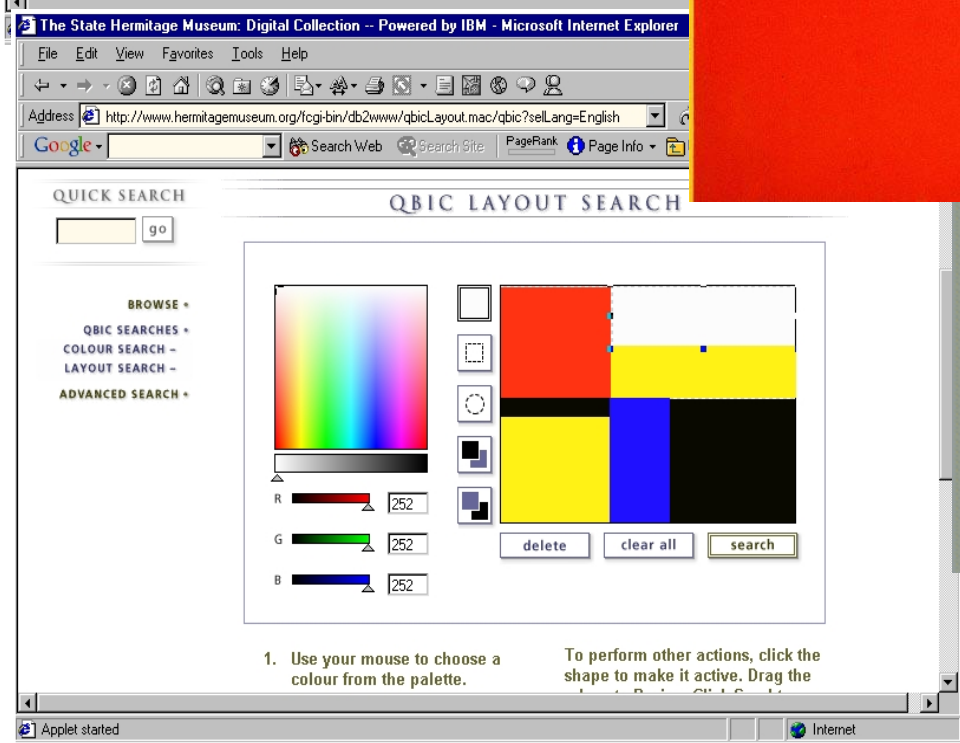
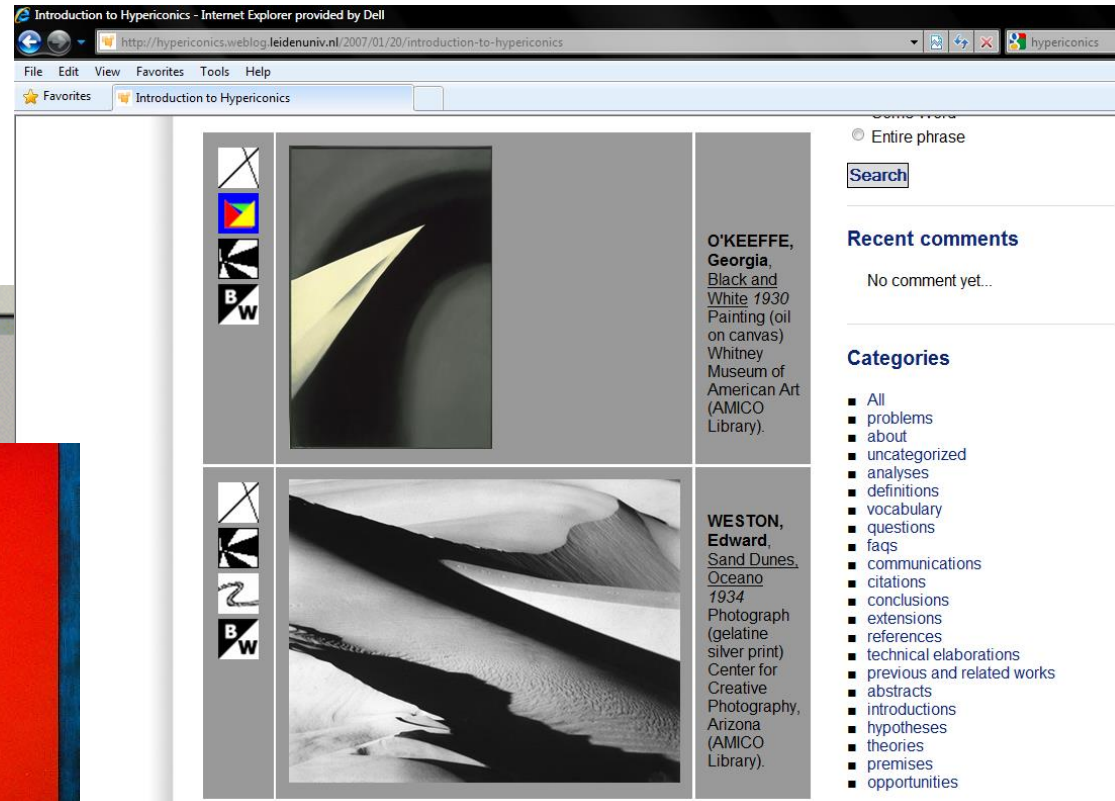


WHO IS AFRAID OF
 WHO IS AFRAID OF
 WHO IS AFRAID OF
 WHO IS AFRAID OF
 WHO IS AFRAID OF



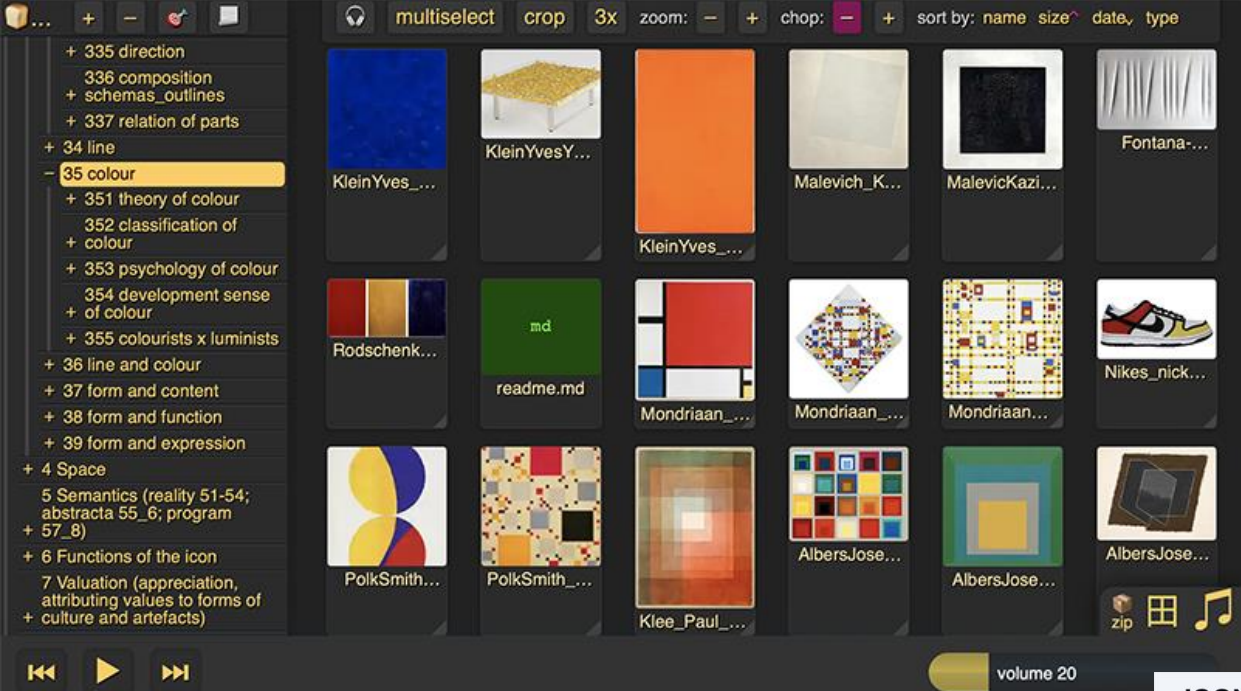


Pre classification
early experiments
with
visual browsing
visual navigation



Art.Similarities
experiment

G. Nauta, As You Can See: Applying Visual Collaborative Filtering to Works of Art, DHQ 2008(2) 1



Beeldleer

35.

(22.7)

Colour

seeing colors



front end Bildgrid

back-end Bildgrid

Beeldleer

35.3

(56.3)

(75)

psychology of colour

color symbolism

psychological approach

Who is afraid of Red Yellow and Blue Variants

ICONCLASS

Clipboard Classify Content charles.van.den.heuvel@huygens.knaw.nl Logout

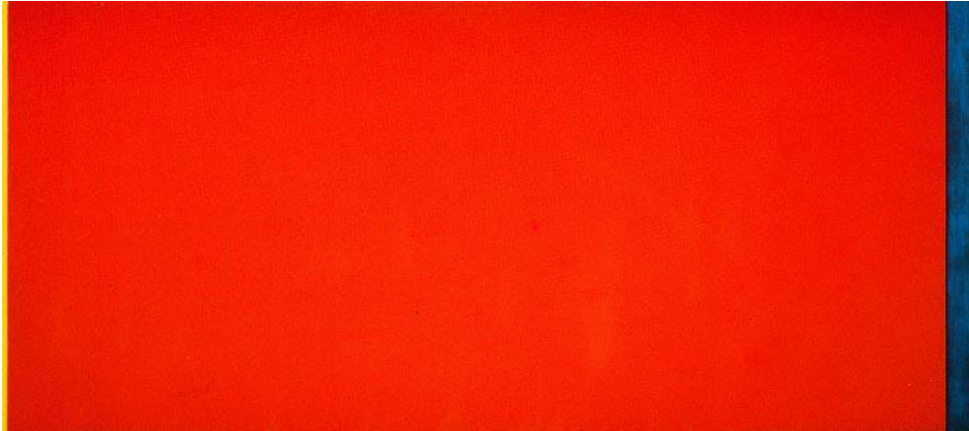
Edit Start / BEELDLEER / 3 Form - matter and structure / 35 colour / 353 psychology of colour / WhosAfraidOfRedYellowBlueVariants /

“Who's Afraid of Red, Yellow and Blue” is primarily the title of a famous series of four large-scale paintings by American artist Barnett Newman, created between 1966 and 1970. Newman intended the title as a challenge to the rigid, “didactic” rules of De Stijl, a movement led by Piet Mondrian that restricted art to primary colors and geometric forms. Newman wanted to “liberate” these colors, using them for pure emotional expression rather than mathematical balance. The title is a play on the 1962 Edward Albee play *Who's Afraid of Virginia Woolf?*, which itself riffs on the song “Who's Afraid of the Big Bad Wolf?”. In the play, the phrase signifies a fear of living without illusions. Newman applied this to art, suggesting people were “afraid” of pure, unadorned color and abstraction without traditional representation.

The title proved prophetic, as the paintings actually provoked intense fear and anger in some viewers. Two works in the series were famously attacked. In 1986, Gerard Jan van Bladeren slashed *Who's Afraid of Red, Yellow and Blue III* at the Stedelijk Museum with a box cutter because he felt abstract art was a “plague”.

A controversial restoration later “ruined” the work by painting over it with a roller, leading some to say it had been “murdered” twice.

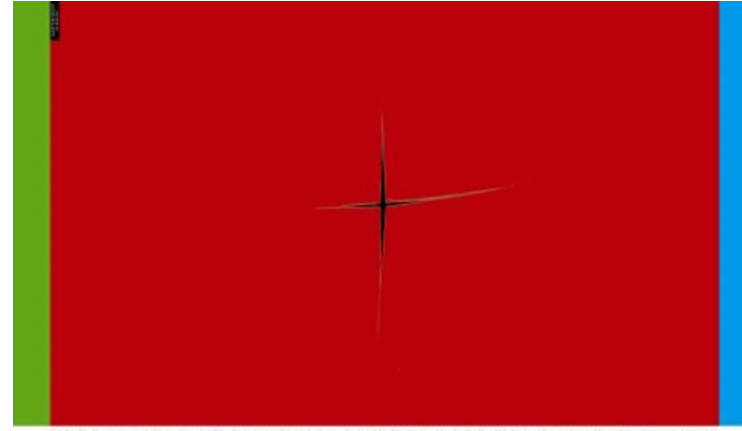
Pre -Classification



rectangular form
three colours red, yellow, blue
irregular division of colour
no-centrality

Beeldleer

22.3 symmetry (**asymmetry**)
22.7 seeing colours
35.2 classification of colour
33.1 composition x order
33.51 horizontal
35 color



rectangular form
three colours red, yellow, green
irregular division of colour
Left and right colour same dimension
no-centrality
black cross-like carved figure in the centre
association with tryptic

Beeldleer

22.3 **symmetry** (asymmetry)
32.1 "random" characteristics
33.1 composition x order
33.51 horizontal
35 color
37 form and content



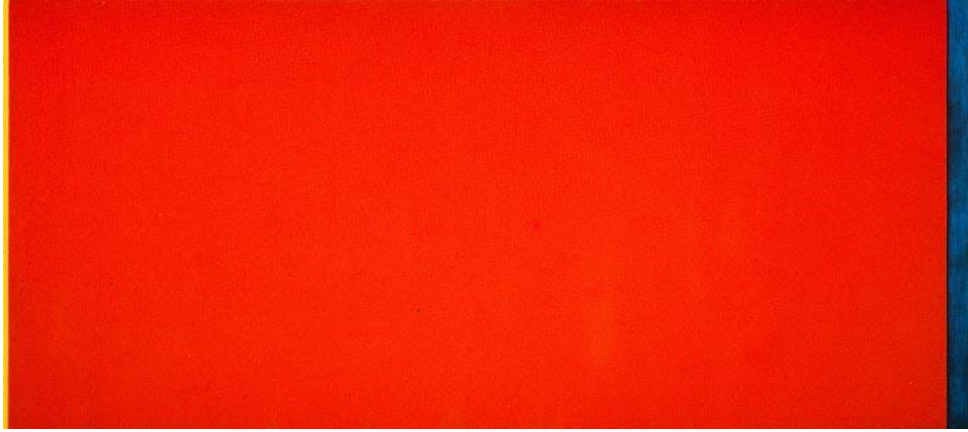
Matthew Paul Cleary, Mysterium Magnum 2009

rectangular form
colour red stains on
12 lit upright panels
black cross with human figure
in centre
association with polyptic

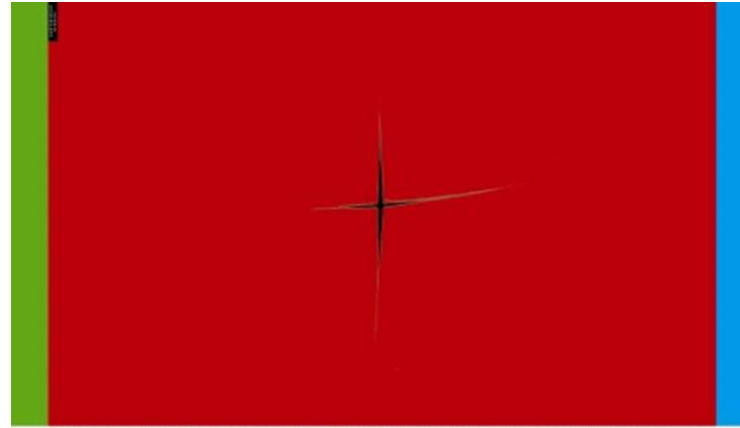
Beeldleer

22.3 **symmetry** (asymmetry)
33.1 composition x order
33.21.1 macchia
33.3 rhythm
46.31.3 series of form
46.82 3-dimensional art works

Classification



Beeldeer
13 icon compared with word
35.3 psychology of colour
51 semantics of the icon
52 semantics of the word
56.3 color symbolism
57:14 title



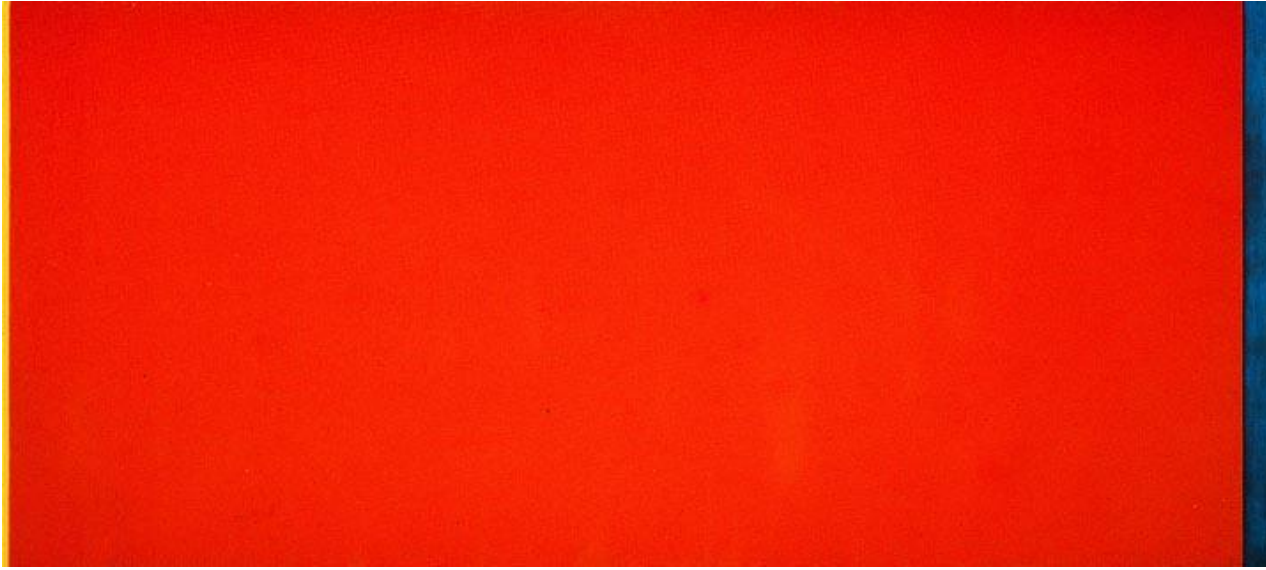
Beeldeer
13 icon compared with word
35.3 psychology of colour
32.9 influence of one technique on another (4 painting – 6 graphical techniques)
51 semantics of the word
52 semantics of the icon
56.3 color symbolism
56.5 ambivalence of symbol
57:14 title



Matthew Paul Cleary, *Mysterium Magnum* 2009

Beeldler
63.0 christian art
63.1 liturgy
63.4 death cult
Iconclass1222
11D351 Christ suffering
(with crown of thorns,
head usually turned sideways)
31A22611 Blood
49 G0 (+51) Medicine laboratory
equipment
49 E 2112 Microscope

Post classification



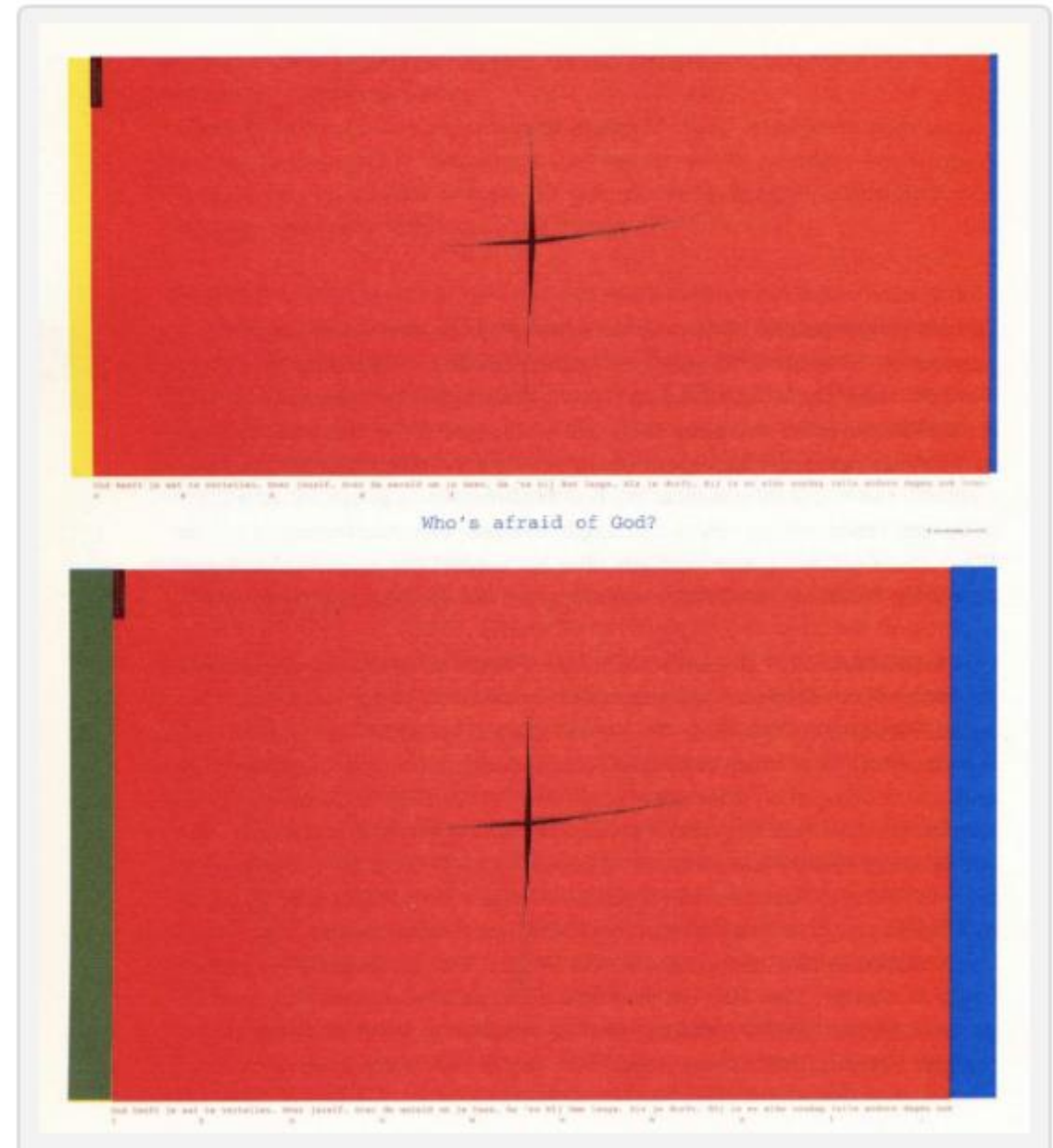
Beeldleer

14.12. image tradition, citation

31.2..3 restoration

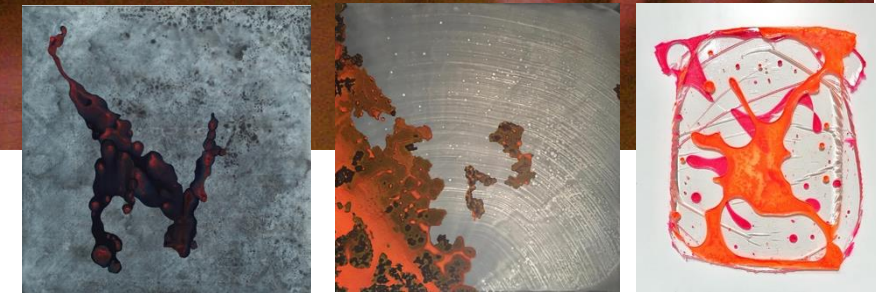
63.52 iconoclasm

65.5 art and law





In his descriptions, Cleary explains that both nature and Christianity entered his life around the same time and both have had an important impact on his art. With his wall-sized piece, Cleary seeks to illustrate that natural beauty is an example of the divine. He brings up religious themes in his art that are not often considered today. Cleary both pushes ahead with his innovative presentation of natural and religious themes and harkens back to older art, as highlighted by his reference to Grunewald.

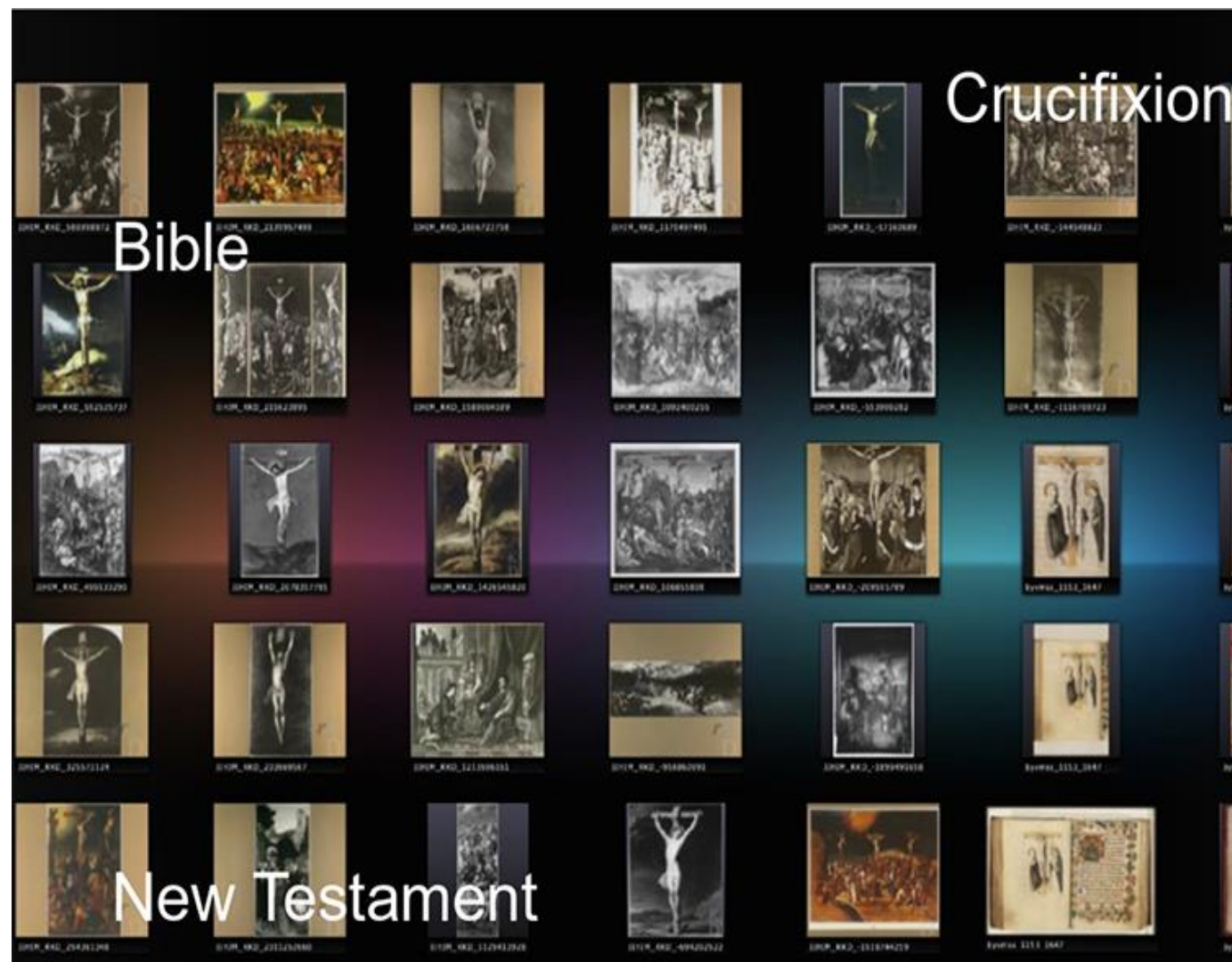
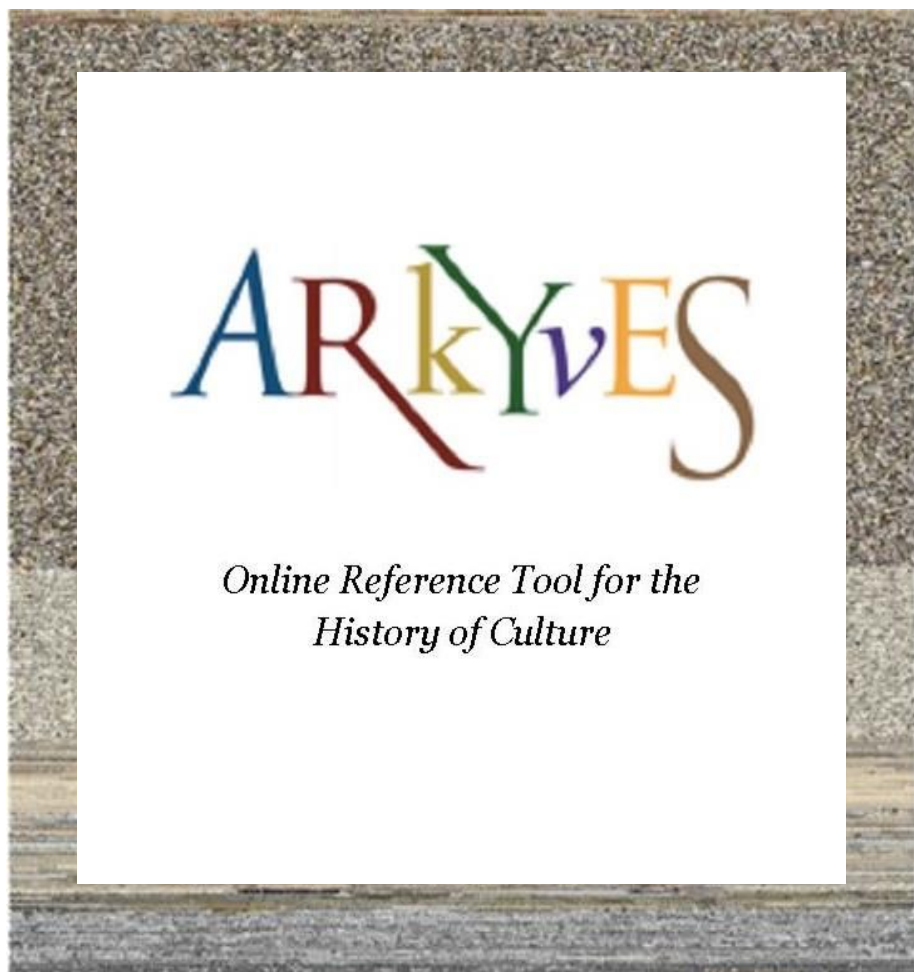


Post Classification

Beeldleer
14.13.1 analogy creation
15.1 comparability art and sciences
27 nature observed via icon
31.12 biological form
63.9 esthetics and religious experience
73.15 genesis of art work
73.15.1 inspiration

Iconclass
11D351 Christ suffering
11D423 The Sacred Blood
11Q714112 Altar, altar screen, retable
48B10 inspiration of the artist in general

Navigate thematic similarities in large data sets with cross-cultural visual resources



multiselect crop 3x zoom: - + chop: - + sort by: name, size date type

- + 632 dogmatics
- + 633 art and mysticism
- 634 death cult (sepulchral monument)
- + 635 dissenting attitude toward visual art
- 639 esthetic and religious experience
- + devotion_piece
- + processions
- + self-flagellation
- **stigmata**
- + 64 ethics
- + 65 society
- + 69 art without function
- 7 Valuation (appreciation, attributing values to forms of culture and artefacts)
- + 8 Theory of style
- + CIT

control-panel | prev / up / next

stigmata

Type some words for semantic search, or drop an

Advanced Search Include keys (-) Sort by notation

Found 363 results, searching for stigmata

All

- 11Q43 stigmatization, stigmata
- 11H(FRANCIS)9 founder of the Order of Friars Minor (Franciscans), Francis(cus) of Assisi; possible attributes: book, crucifix, lily, skull, stigmata - portrait of male saint
- 11H(FRANCIS)0 founder of the Order of Friars Minor (Franciscans), Francis(cus) of Assisi; possible attributes: book, crucifix, lily, skull, stigmata - male saint represented in a group
- 11H(FRANCIS)7 founder of the Order of Friars Minor (Franciscans), Francis(cus) of Assisi; possible attributes: book, crucifix, lily, skull, stigmata - apotheosis, glory, triumph of male saint
- 11HH[MARY-MAGDALENE OF PAZZI]13 the Carmelite nun of Florence, Mary-Magdalene of Pazzi; possible attributes: chain, Christ-child, crown of thorns, instruments of the Passion, stigmata - female saint as

Here are 18 sample images.

FOR KUNSTGESCHICHTE - BILDARCHIV FOTO MARGB, PHILIPPS-UNIVERSITÄT MARBURG) 2025, Bildindex query for notation 11Q43 (and narrower terms)

KBR, Koninklijke Bibliotheek van België 2025, KBR query for notation 11Q43

EMBLEMATICA ONLINE 2025, Emblematica online query for notation 11Q43

Rijksmuseum Amsterdam 2025, Query for stigmatization, stigmata

Wikidata - the free, collaborative and open knowledge base; central storage for the structured data of Wikipedia, Wikimedia, etc. 2025, s.v. stigmata

Os, Henk van Franciscus van Assisi (2nd ed.) 2016, Zwolle

J. M. Hoeck Träeger der Wundmale Christi. Eine Geschichte der bedeutendsten Stigmatisierten von Franziskus bis zur Gegenwart (2 vols.) 1951-1952, Wiesbaden

Mappings

top > BEELDLEER > 6 Functions of the icon > 63 religion > 639 esthetic and religious experience > stigmata > readme.md

go light hide nav save sbs editor tools

Beeldleer

Stigmata refers to the spontaneous, often bleeding, appearance of wounds corresponding to the crucifixion injuries of Jesus—hands, feet, side, and head—on a person's body. Considered a mystical, miraculous sign of union with Christ's passion, these marks are most commonly associated with Catholic saints like St. Francis of Assisi.

Beeldleer

Stigmata refers to the spontaneous, often bleeding, appearance of wounds corresponding to the crucifixion injuries of Jesus—hands, feet, side, and head—on a person's body. Considered a mystical, miraculous sign of union with Christ's passion, these marks are most commonly associated with Catholic saints like St. Francis of Assisi.

Beeldleer

57.11.0 - Motif Index

Motif Index

E 761.1

Iconclass

11Q43 - stigmata, stigmatization

Beeldleer

57.11.0 - Motif Index

Motif Index

E 761.1

Iconclass

11Q43 - stigmata, stigmatization

⌘P⌘ PIP⌘P*PIPSG/CḄ CḄC.CḄP*PSPḄCḄCḄ
*PḄPḄPḄCḄPḄPḄPḄCḄCḄ PḄ PḄPḄCḄC.C.CḄPḄCḄPḄPḄCḄCḄ

S. Thompson. Motif-index of folk-literature : a classification of narrative elements in folktales, ballads, myths, fables, medieval romances, exempla, fabliaux, jest-books, and local legends.

Revised and enlarged. edition. Bloomington : Indiana University Press, 1955-1958.

Grant support: INTAS project 05-1000008-7922, P PḄPḄPḄPḄ #06-06-80-420a, P PḄPḄPḄPḄ #07-06-00441-P*

Please write me about errors etc: kozmin@gmail.com

- A. Mythological Motifs
- B. Animal Motifs
- C. Motifs of Tabu
- D. Magic
- E. the Dead
- F. Marvels
- G. Ogres
- H. Tests
- J. the Wise and the Foolish
- K. Deceptions
- L. Reversals of Fortune
- M. Ordaining the Future
- N. Chance and Fate
- P. Society
- Q. Rewards and Punishments
- R. Captives and Fugitives
- S. Unnatural Cruelty
- T. Sex
- U. the Nature of Life
- V. Religion
- W. Traits of Character
- X. Humor
- Z. Miscellaneous Groups of Motifs

E761.1. E761.1. *Blood as life token.*

E761.1.1. E761.1.1. *Life token: water turns to blood.* (Cf. F961.3.1, V211.2.3.2.) Fb вЪньвандѣТѣ III 1000b.--England: Baughman; Irish myth: *Cross; India: Thompson-Balys.

E761.1.2. E761.1.2. *Life token: horn fills with blood* Africa (Congo): Weeks 203.

E761.1.3. E761.1.3. *Life token: track fills with blood* *Type 303; Icelandic: Boberg.

E761.1.3.1. E761.1.3.1. *Life token: earth, water, or blood in footprint.* Earth: dead by disease; water: drowned; blood: killed in battle. Icelandic: Boberg.

E761.1.4. E761.1.4. *Life token: blood of fish calls out.* Africa (Eko): Talbot 187.

E761.1.5. E761.1.5. *Life token: blood boils.* French: Cosquin Lorraine No. 5; Jewish: *Neuman.

E761.1.5.1. E761.1.5.1. *Blood stops boiling.* Gaster Exempla 224 No. 194.

E761.1.6. E761.1.6. *Life token: blood changes color.* Gaster Exempla 251 No. 373; Russian: Ralston Russian Folk-Tales 102.

E761.1.7. E761.1.7. *Life token: comb drips blood* Finnish: Kalevala runes 12, 15.

E761.1.7.1. E761.1.7.1. *Life token: gloves drip blood* Russian: Ralston Russian Folk-Tales 67.

E761.1.7.2. E761.1.7.2. *Life token: scissors (razor, knife) drip blood* Chauvin VII 198; Armenian: Macler Contes ArmPḄNniens 28.

E761.1.8. E761.1.8. *Life token: cloth becomes bloody*, *Bolte Zs. f. Vksk. XX 70 n. 3.

E761.1.9. E761.1.9. *Life token: heroѣТѣs horse stands in stable in blood up to his knees.* Russian: Rambaud La Russie Epique (Paris, 1876) 378.

E761.1.10. E761.1.10. *Life token: milk becomes bloody.* England: Baughman; India: *Thompson-Balys.

E761.1.11. E761.1.11. *Life token: roof spouts of castle run with blood.* England: Baughman.

E761.1.12. E761.1.12. *Life token: meal ground in mill is the color of blood.* England: Baughman.

E761.1.13. E761.1.13. *Blood stops flowing from wound when captives escape.* Papua: Ker 64.

E761.2. E761.2. *Life token: staff stuck in ground.* India: Thompson-Balys.

E761.2.1. E761.2.1. *Life token: staff stuck in ground shakes.* Africa (Basuto): Jacottet 212 No. 31, (Kaffir): Theal 82.

E761.2.2. E761.2.2. *Life token: staff stuck in ground falls.* *Bolte Zs. f. Vksk. XX 70 n. 8; Africa (Basuto): Jacottet 220 No. 32.

E761.3. E761.3. *Life token: tree (flower) fades.* *Bolte Zs. f. Vksk. XX 70 n. 1; Fb вЪньлїїїїїТѣ; BCḄckel Psychologie der Volksdichtung 255; *Loomis White Magic 125f.--Breton: SPḄbillot Incidents s.v. вЪньлїPNḄtrissementsТѣ; French: SPḄbillot France III 433; India: *Thompson-Balys; Japanese: Ikeda; Loomis (Tinguiun): Cole 93, 96 n. 3, 97; Papua: Ker 61; Indonesian, Polynesian: Dixon 234 n. 46; Africa (Angola): Chatelain 87 No. 5, (Kaffir): Kidd 225. (Madagascar): Dandouau Contes Populaires de Sakalava 234

Requirements for future experiments

- Requirement 1 (Inter-)mediate results in experiments with a.i and c.v must be classified as a process: pre-classification; classification; post classification (this different from Panofsky's tri-partite iconological method)
- Requirement 2 Interactions with visual knowledge systems must follow iterative processes of browsing, navigating and organising information.
- Requirement 3: test with existing interfaces and create mappings to existing ontologies, classifications, vocabularies

Thank you

' I think however, that the method of discerning iconological groups held together one time by their theological contents, another time by their artistic or psychological can be useful for this type of studies. To me iconology is to a great extent the study of attractions, the intercourses and the contaminations of these groups."

Henri van de Waal, Letter to Erwin Panofsky 31 December 1947 _ Smithsonian Institution Washington DC