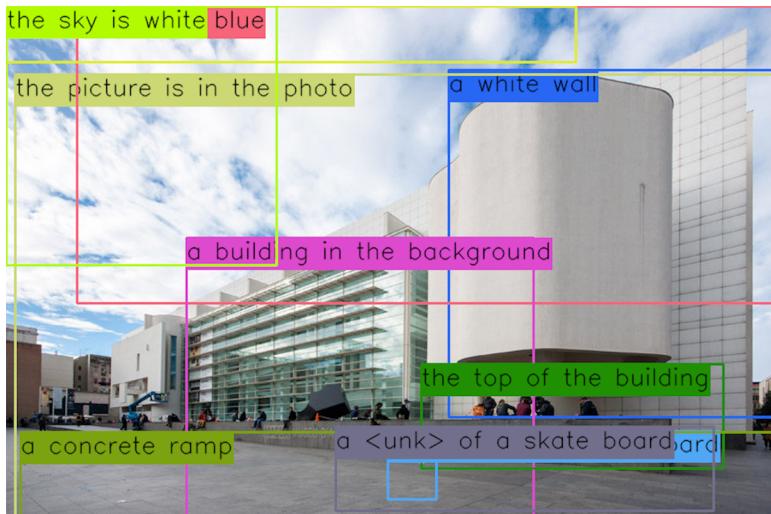


# A Crack within the museum

# MACBA

Problematizing Computer Vision of Commercial AIs





In recent years, commercial systems based on artificial intelligence have emerged and have been gaining ground in the daily life of large cities, however almost imperceptibly to end users. We are in contact with these systems when we use translation services, product recommendation, object and person detection, and many other services. These systems are trained with large volumes of data, and, inevitably, present some type of ideological bias.

From the analysis of contemporary artwork figures using the Art Decoder\* platform, we realized the possibility of looking at these systems from a critical perspective. We present this zine, with works selected collectively from the digital collection of the Museu d'Art Contemporani de Barcelona (MACBA), being concerned to highlight some of the ideological biases present in some of those commercial computer vision systems, which, as we have seen in our research, follow a capitalist, consumerist and sometimes misogynistic logic. In addition, we highlight other moments when our platform is unable to understand artworks resulting in interpretations of great poetic value.

This publication wouldn't be possible without the support of CtrlZ.AI organization members, and the commitment of the participants of the workshop "A Crack Within the Museum", carried out by Lucas Nunes Sequeira and Rafael Tsuha members of GECID\*\*, on January 30, 2020, at CtrlZ.AI, Barcelona.

## **Good reading!**

\* Art Decoder is a platform created by Gabriel Pereira and Bernardo Fontes, part of our group and have been used since 2018 to reveal the behavior of commercial AIs (Amazon Rekognition, Google Cloud Vision, Microsoft Azure, ClarifAI, Densecap, Facebook Detectron, IBM Watson and Darknet YOLO APIs) from the use of contemporary art images. Another recent project with Art Decoder was the short movie Recording Art (<https://vimeo.com/321866181>) and the academic article "Ways of Seeing with Computer Vision: Artificial Intelligence and Institutional Critique", both made by Gabriel Pereira and Bruno Moreschi as part of Deviant Practice Grant - Van Abbemuseum.

\*\* We are part of the Grupo de Experiências Críticas em Infraestruturas Digitais (GECID), an activist group of researchers from different areas of knowledge coordinated by artist Bruno Moreschi and located at the Comunidade de Arte e Inteligência Artificial (CAIA) / Center for Artificial Intelligence (C4AI, coordinated by professor Fabio Cozman) / Inova USP - University of São Paulo, Brazil. Our work involves a set of experiences that aims to think and problematize contemporary infrastructures based on a logic different from that applied in technology centers in the Global North. We are interested in encouraging studies that think about technology not in an abstract way, but inserted in determined contexts, with social implications.





Joan Miró

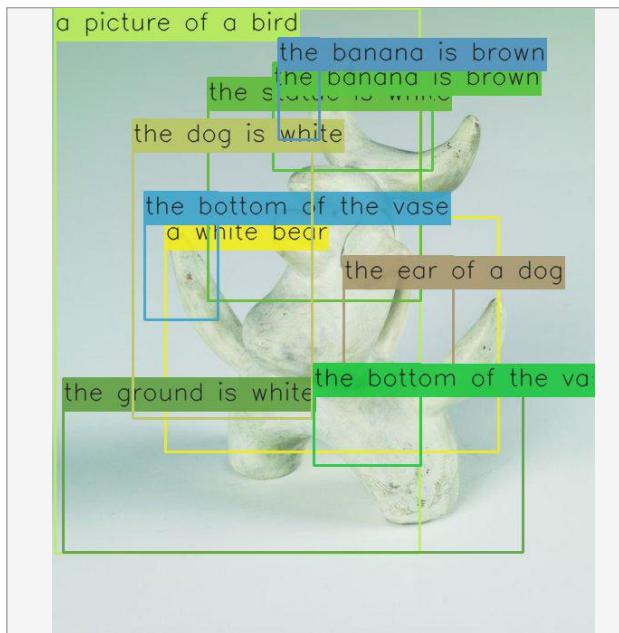
Oiseau

1946-1949



Related to nature, water, flower and garden.

## #01 no description



<b>Microsoft Azure</b>	category: abstract nonphoto	is adult content? False	<b>32%</b> adult
labels:	holding	board	
statue	animal figure	green	
indoor	white	water	
sculpture	vegetable	apple	
table	small	vase	
cartoon	sitting	blue	

<b>ClarifAI</b>	safe for work?	<b>0%</b> nsfw
labels:	<b>93%</b> flower	<b>91%</b> shape
<b>99%</b> art	<b>92%</b> illustration	<b>87%</b> water
<b>97%</b> sculpture	<b>92%</b> decoration	<b>87%</b> closeup
<b>96%</b> desktop	<b>92%</b> no person	<b>86%</b> abstract
<b>96%</b> nature	<b>91%</b> statue	<b>85%</b> figurine
moderation:	<b>99%</b> safe	<b>0%</b> suggestive
		<b>0%</b> explicit
		<b>0%</b> gore
		<b>0%</b> drug

Leonor Antunes

Anni #18 Fragment 13

2015



Tagged as a cage.



ClarifAI

safe for work? 0% nsfw

labels:

94% no person  
94% empty  
94% design  
94% weaving

92% desktop  
90% paper  
89% stripe  
87% retro  
86% texture

86% disjunct  
86% wood  
86% rough  
83% illustration  
81% net

81% cotton  
81% vertical  
81% storage  
80% business  
79% fabric

moderation:

99% safe 0% suggestive 0% explicit 0% gore 0% drug

Microsoft Azure

category:  
othersis adult content? False 0% adult  
is racy content? False 0% racy

labels:

cage  
text  
white  
fabric  
pattern

textile

Ferran Garcia Sevilla

Déu amb el cos de metall i molt de braços o God beside a litte fire. Sèrie  
Déus núm. 24

1981



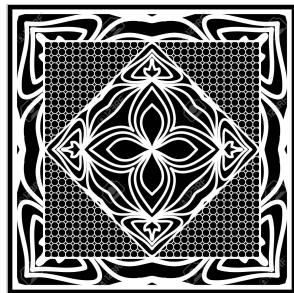
Despite causing discomfort, it is 100% sfw.

## #03 a close up of a logo

83%



visually similar



ClarifAI

safe for work? 0% nsfw

labels:

96% pattern

95% illustration

94% design

94% art

92% no person

91% graphic

91% Halloween

91% abstract

91% vector

90% retro

90% stripe

87% desktop

87% line

87% decoration

87% artistic

86% symbol

85% wear

84% fashion

83% print

moderation:

99% safe

0% suggestive

0% explicit

0% gore

0% drug

Google Cloud Vision

best guess: monochrome photography

violence:

very unlikely

medical:

very unlikely

adult:

very unlikely

spoof:

very unlikely

racy:

very unlikely

68% black-and-white

62% visual arts

54% monochrome

labels:

66% illustration

56% printmaking

65% art

56% pattern

text: ☰ // //// • ☰ • , ☰ ☰ ☰

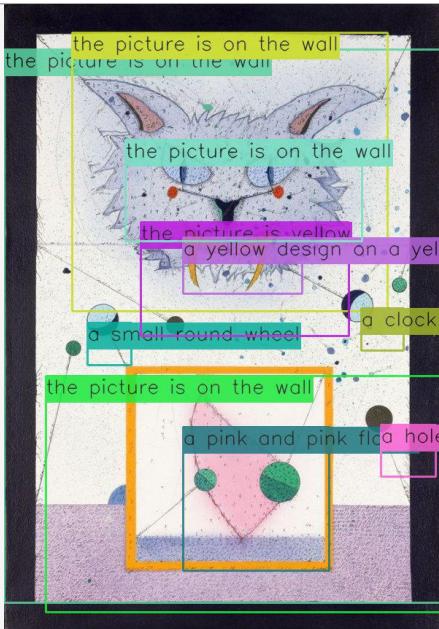
Zush  
**Gorphino**  
1973



Read as 100% child art and tagged as man.

## #04 graffiti on a wall

47%



visually similar

**Microsoft Azure**category:  
abstract rectis adult content? False **1%** adult  
is racy content? False **1%** racy

labels:	sign	painting
child art	man	handwriting
text	art	map
cartoon	cat	picture frame
graffiti	illustration	
drawing	abstract	

**Google Cloud Vision**

best guess: cat

violence:  
very unlikelymedical:  
very unlikelyadult:  
very unlikelyspoof:  
unlikelyracy:  
very unlikelylabels: **79%** line**70%** cat**62%** whiskerslabels: **77%** illustration**66%** visual arts**59%** paperlabels: **70%** art**66%** rectangle**53%** paper product

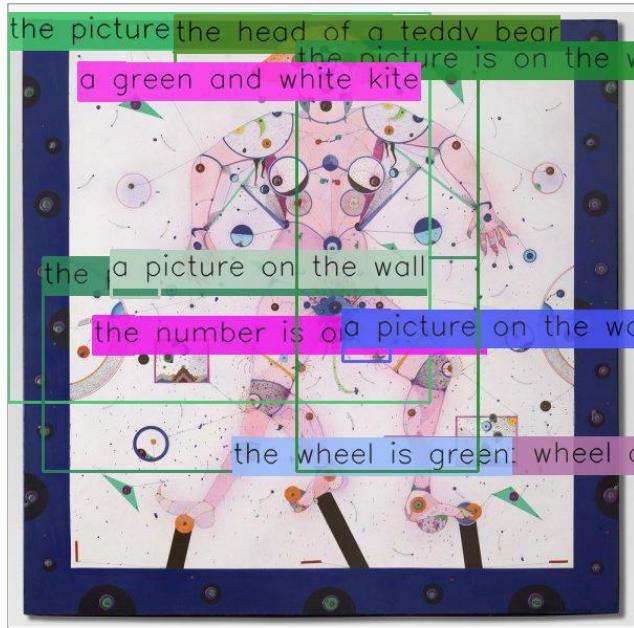
text: no texts found

Zush  
Kaenia II  
1972



Read as monitor, computer, laptop and holding.

## #05 no description



visually similar

### Microsoft Azure

category:  
others

is adult content? False 2% adult  
is racy content? False 2% racy

labels:	thing	clock	open
text	photo	map	small
computer	monitor	different	sitting
child art	drawing	laptop	desk
indoor	table	colored	various
cartoon	art	white	holding

### ClarifAI

safe for work? 0% nsfw

labels:

93% graphic

90% sketch

87% child

97% illustration

93% design

89% card

86% image

96% desktop

92% art

88% decoration

85% celebration

94% vector

91% old

88% fun

84% toy

94% picture frame

91% retro

88% vintage

83% cute

moderation:

99% safe

0% suggestive

0% explicit

0% gore

0% drug

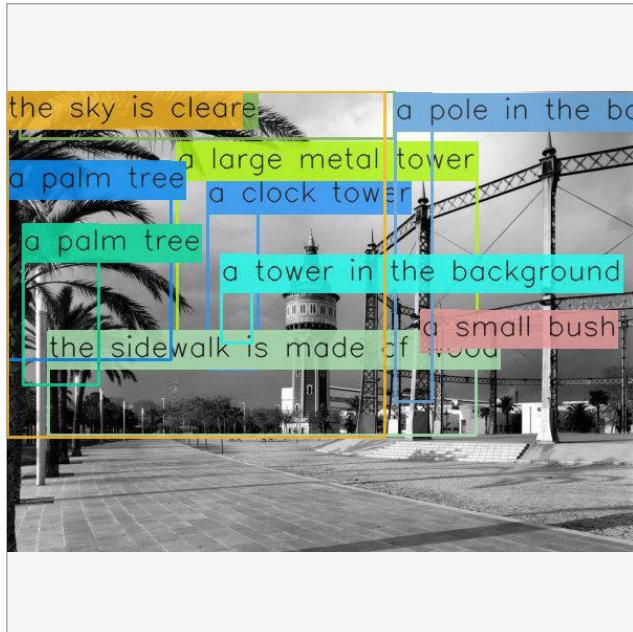
Xavier Basiana, Jaume Orpinell

**Catalana de Gas**

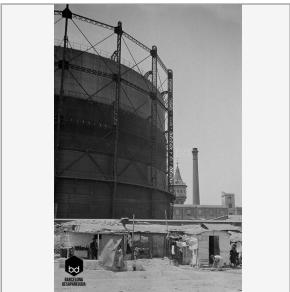
1997-1998



Person and no person conflict.



visually similar

**ClarifAI**

safe for work? 3% nsfw

labels:

98% no person	95% outdoors	88% water	86% urban
98% architecture	94% city	88% tourism	85% tree
98% travel	94% sky	86% road	84% people
96% street	94% building	86% light	83% tower

moderation:

99% safe	0% suggestive	0% explicit	0% gore	0% drug
----------	---------------	-------------	---------	---------

**Amazon Rekognition**

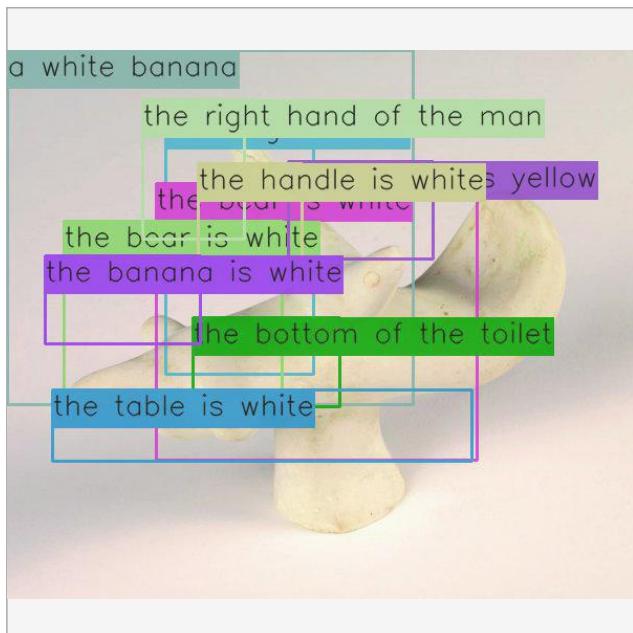
labels:

93% building	76% person
84% architecture	76% human
77% city	74% tree
77% urban	74% plant
77% town	68% construction
	66% road
	55% downtown

Joan Miró  
Oiseau (Solaire)  
ca. 1946



Tagged as nature, still life, food and water.



visually similar

**ClarifAI**

safe for work? 0% nsfw

labels:

99% no person  
97% one  
96% nature  
93% two

92% isolated  
90% food  
89% simplicity  
88% cutout  
85% sculpture

83% disjunct  
83% still life  
80% health  
79% water  
79% wildlife

79% three  
78% shape  
78% desktop  
77% winter  
77% fungus

moderation:

99% safe 0% suggestive 0% explicit 0% gore 0% drug

**Amazon Rekognition**

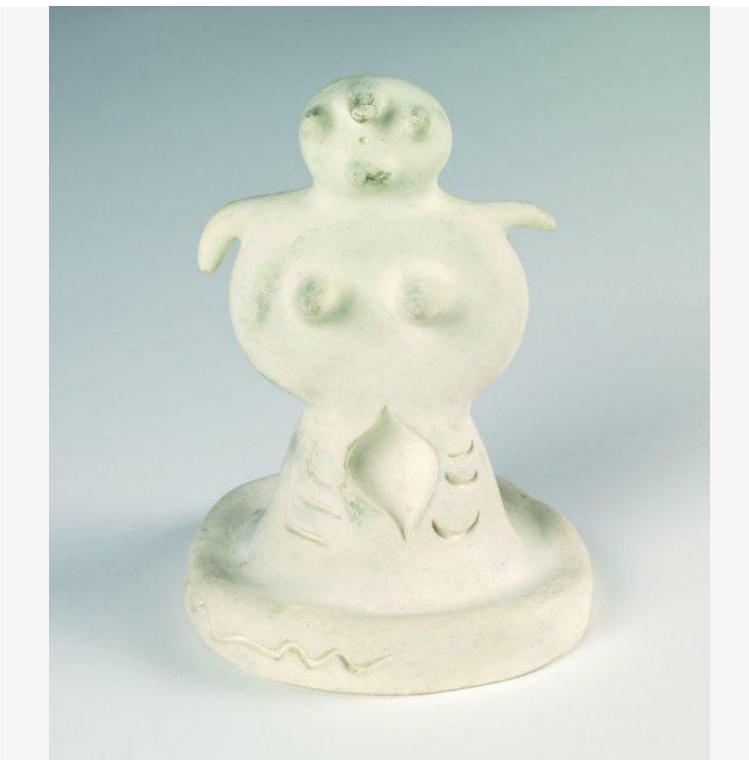
labels:

99% figurine  
60% art  
60% sculpture  
55% torso

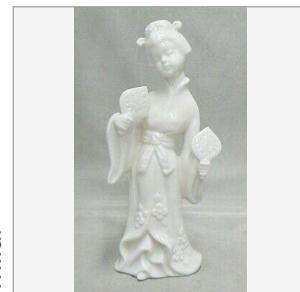
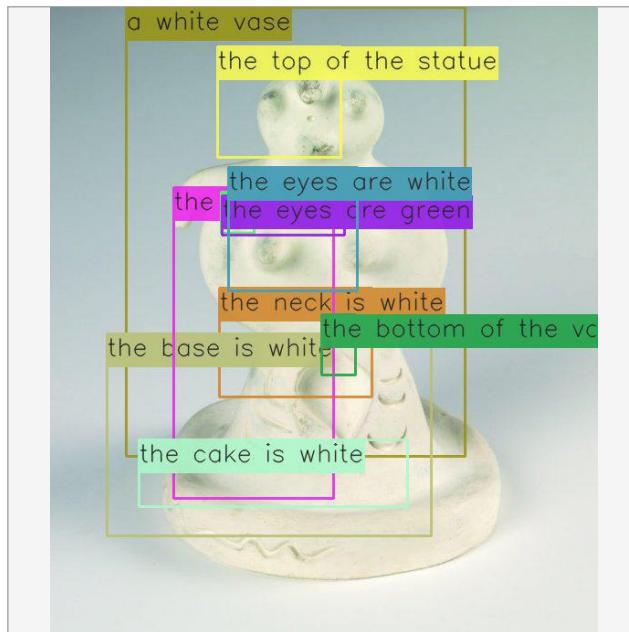
Joan Miró

**Femme**

1949



1% suggestive and 89% Buddha.



## ClarifAI

safe for work? 0% nsfw

labels:

99% sculpture

98% figurine

98% no person

98% statue

98% art

97% figure

97% one

96% toy

95% doll

92% cutout

92% people

92% still life

91% chess

89% man

89% Buddha

88% religion

88% pottery

87% conceptual

86% travel

moderation:

99% safe

0% suggestive

0% explicit

0% gore

0% drug

## Google Cloud Vision

best guess: figurine

violence:

very unlikely

medical:

very unlikely

adult:

unlikely

spoof:

very unlikely

racy:

possible

96% figurine

78% porcelain

76% ceramic

72% toy

72% sculpture

54% statue

50% art

text: no texts found

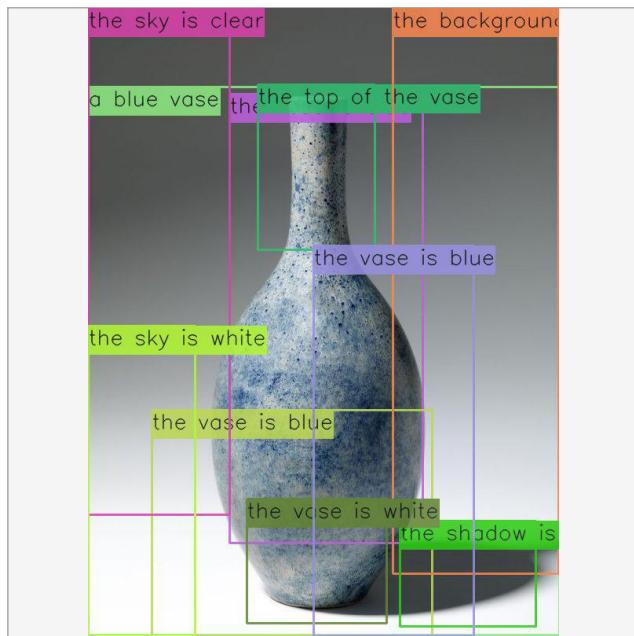
Antoni Cumella

**No title**

1951



36% drug.



**ClarifAI** safe for work? 0% nsfw

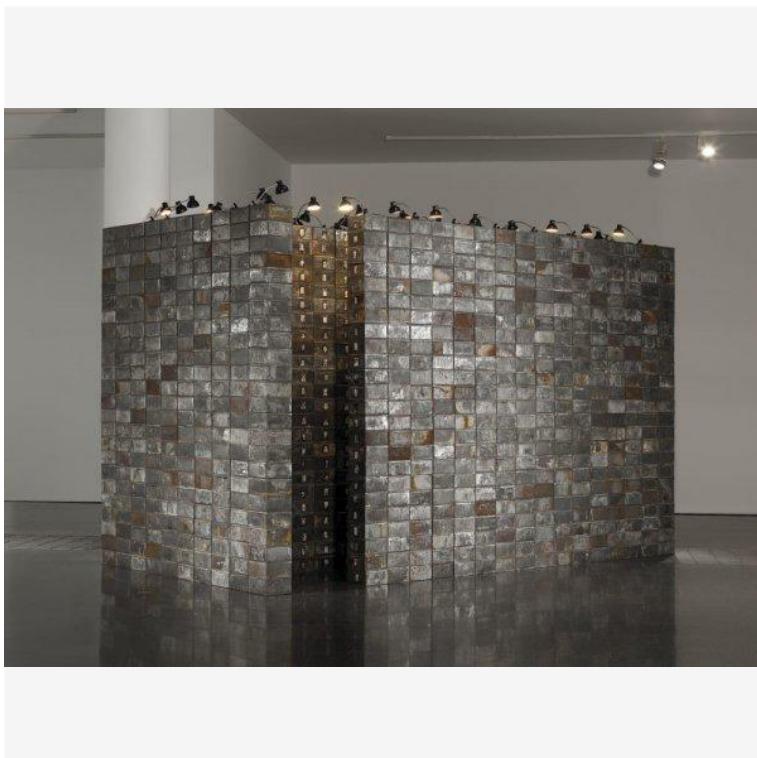
labels:	95% tableware	87% cutout	79% food
99% no person	94% still life	85% art	79% grow
97% one	93% vase	84% desktop	76% medicine
95% pottery	90% kitchenware	82% retro	76% reflection
95% container	88% simplicity	81% drink	75% vintage

moderation: 63% safe 0% suggestive 0% explicit 0% gore 36% drug

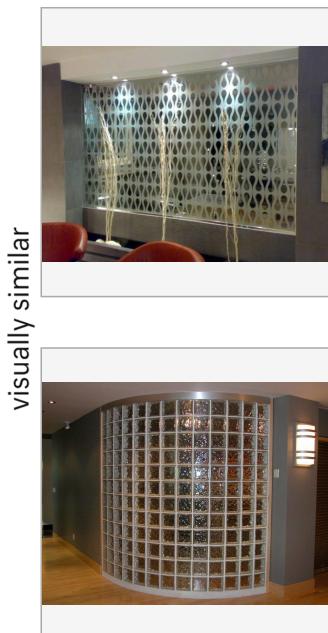
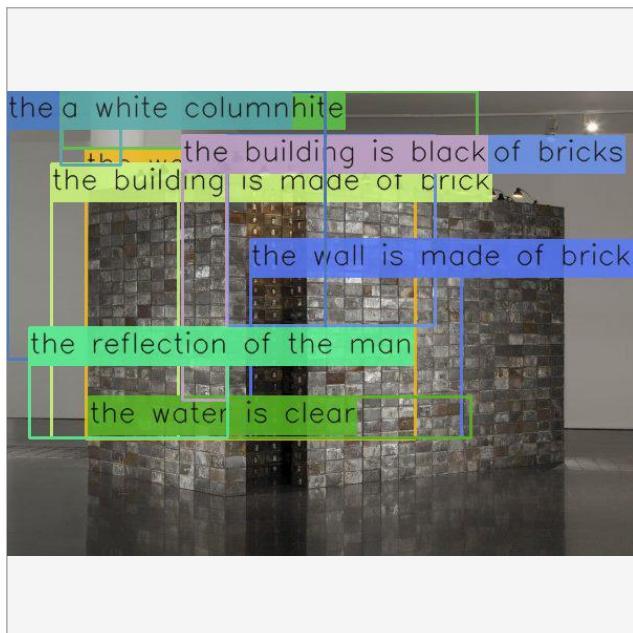
**Microsoft Azure**

category:	object sculpture	is adult content?	False	3% adult
		is racy content?	False	3% racy
labels:	black	plant	flower	
bottle	utensil	single	ledge	
vase	white	small	background	
indoor	sitting	ceramic	surface	
thing	vessel	porcelain	blue	
ceramic ware	table	stoneware	holding	

Christian Boltanski  
Réserve de Suisses morts  
1991



Tagged as 100% safe. A reflection of the man? Who is the man? And 79% bird.



ClarifAI

safe for work? 1% nsfw

labels:

95% wall	91% light	84% window	81% old
95% no person	90% house	82% daylight	80% bathroom
94% architecture	87% room	81% mirror	79% door
94% building	86% travel	81% city	79% desktop
	85% reflection	81% home	78% museum

moderation:

99% safe 0% suggestive 0% explicit 0% gore 0% drug

Amazon Rekognition

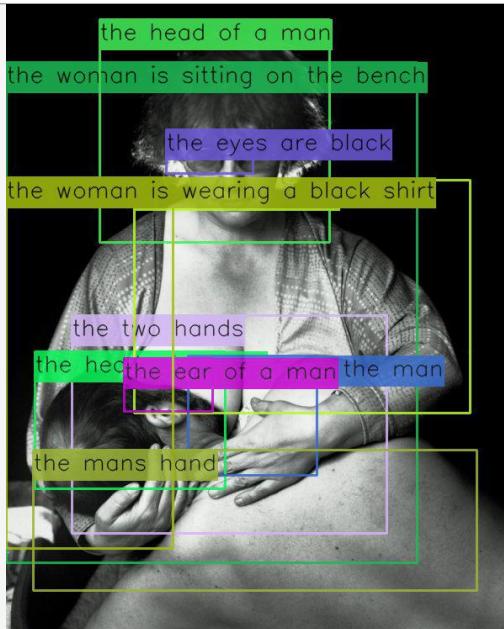
labels:

99% room	79% bird
99% indoors	73% floor
93% lobby	72% shower
87% bathroom	65% wall
79% animal	62% person
	62% human
	55% lighting

Jo Spence, Terry Dennett  
Remodelling Photo History  
1982



Woman head read as man's head and man, in a tipically child position, identified as a baby.



visually similar



ClarifAI

safe for work? 27% nsfw

labels:

99% people

99% baby

98% portrait

98% adult

98% maternity

97% one

97% woman

97% son

97% two

96% child

96% monochrome

96% love

95% nude

95% newborn

93% birth

92% man

89% ma

87% girl

86% affection

moderation:

1% safe

97% suggestive

0% explicit

0% gore

0% drug

Google Cloud Vision

best guess: Jo Spence

violence:

very unlikely

medical:

very unlikely

adult:

unlikely

spoof:

very unlikely

racy:

very likely

labels:

95% photograph

83% arm

83% child

82% black-and-white

81% mother

78% human

77% joint

75% shoulder

74% photography

text: no texts found

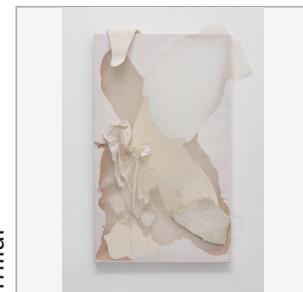
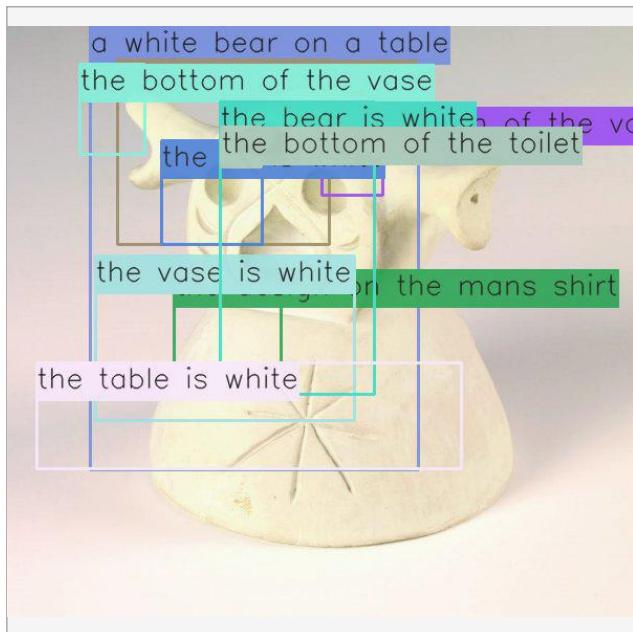
Joan Miró

Tête

1946-1949



Tagged as plate, large, birthday, holding, playing, bed and woman.



visually similar



visually similar

<b>Microsoft Azure</b>	category: others	is adult content? False is racy content? False	<b>0%</b> adult <b>0%</b> racy
labels:	statue	decorated	birthday
cartoon	sitting	looking	holding
indoor	animal figure	ceramic ware	playing
table	white	small	bed
toy	sculpture	plate	woman
cake	made	large	cat

<b>ClarifAI</b>	safe for work?	<b>0%</b> nsfw
labels:	95% cutout	91% traditional
98% toy	93% ceramic	89% shape
98% figurine	92% food	89% isolate
97% desktop	92% symbol	89% doll
96% decoration	91% sculpture	89% one
moderation:	99% safe	0% suggestive
	0% explicit	0% gore
	0% explicit	0% drug

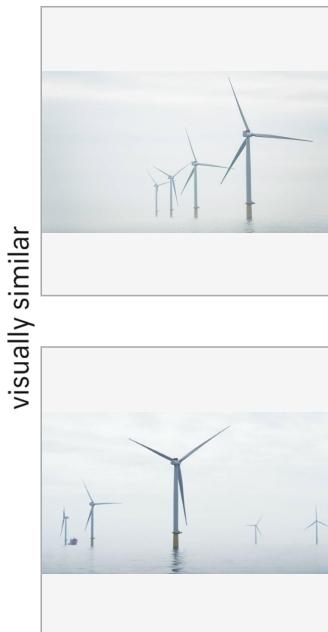
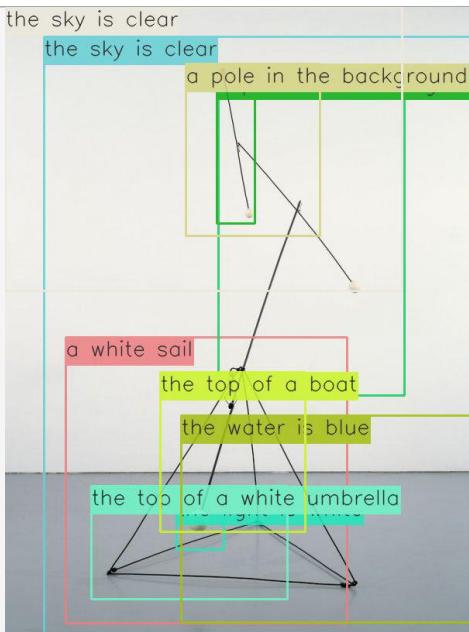
Alexander Calder

**No title**

1931



Visually similar to windmill.



## Google Cloud Vision

best guess: triangle

violence:  
very unlikelymedical:  
very unlikelyadult:  
very unlikelyspoof:  
very unlikelyracy:  
very unlikely

73% design

67% triangle

labels: 72% triangle

72% line

text: no texts found

## ClarifAI

safe for work? 0% nsfw

labels:

94% no person

93% technology

91% balance

88% energy

87% business

84% one

81% water

80% people

79% science

78% construction

76% connection

75% sky

72% environment

72% image

71% industry

70% physics

68% electricity

68% stand

67% antenna

moderation:

99% safe

0% suggestive

0% explicit

0% gore

0% drug

Anonymous work

Pop Quiz

1990

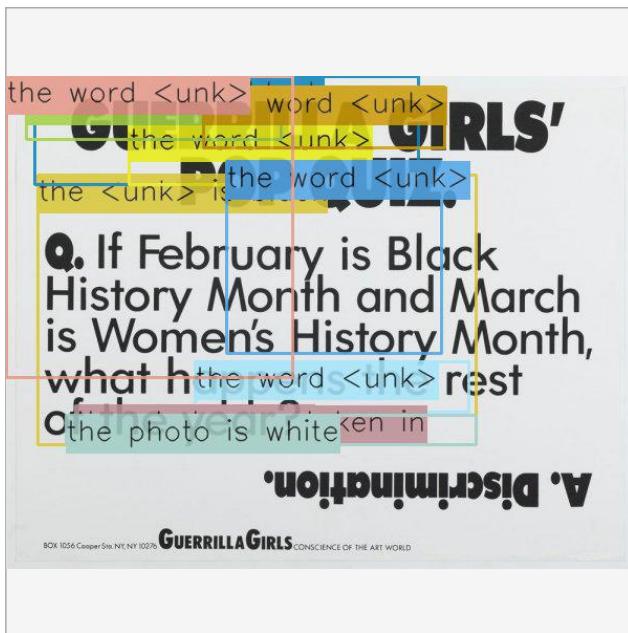
# GUERRILLA GIRLS' POP QUIZ.

**Q. If February is Black History Month and March is Women's History Month, what happens the rest of the year?**

**A. Discrimination.**

BOX 1056 Cooper St., NY, NY 10276  
**GUERRILLA GIRLS** CONSCIENCE OF THE ART WORLD

Read as possibly spoof.



**Google Cloud Vision** best guess: guerilla girls poster

violence:	medical:	adult:	spoof:	racy:
very unlikely	very unlikely	very unlikely	possible	very unlikely

labels: 98% text  
98% font

text: guerrilla girls' pop quiz. q. if february, is black history month and ...

**Amazon Rekognition**

labels:	55% license
99% text	55% driving license
87% paper	
73% face	
65% word	
55% document	

**AT LAST!**  
**MUSEUMS WILL NO LONGER DISCRIMINATE AGAINST WOMEN AND MINORITY ARTISTS.\***

\*Under the Civil Rights Restoration Act of 1988, an institution that discriminates in any of its operations will be denied federal funds. We encourage women and artists of color to contact their favorite museums. THEY NEED YOU NOW!

Please send \$ and comments to: **GUERRILLA GIRLS**, CONSCIENCE OF THE ART WORLD

**ONLY 4 COMMERCIAL GALLERIES IN N.Y. SHOW BLACK WOMEN.\***

**ONLY 1 SHOWS MORE THAN 1.\*\***

\*Cavin-Morris, Condeso/Lawler, Bernice Steinbaum, Shreiber/Cufar  
\*\*Cavin-Morris

**GUERRILLA GIRLS** CONSCIENCE OF THE ART WORLD

Anonymous work

Republicans Do Believe in a Woman's Right to Control Her Own Body!  
1992

**Republicans do believe  
in a woman's right to  
control her own body!**



Dyed hair  
& make-up



Nose jobs



Face lifts



Liposuction



Breast implants



Anorexia  
& Bulimia



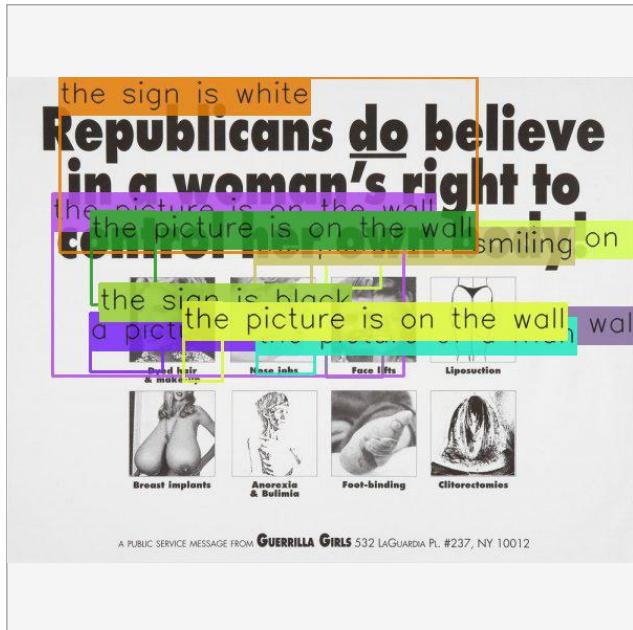
Foot-binding



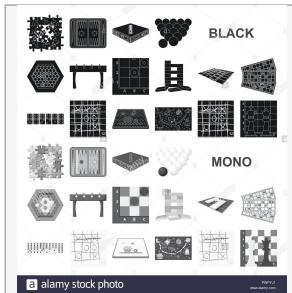
Clitorectomies

A PUBLIC SERVICE MESSAGE FROM **GUERRILLA GIRLS** 532 LA GUARDIA PL. #237, NY 10012

Political ad as non-adult and non-racy.



visually similar



**Google Cloud Vision** best guess: human behavior

violence: very unlikely	medical: very unlikely	adult: very unlikely	spoof: possible	racy: unlikely
labels: 94% text		74% human		54% paper
labels: 81% font		74% history		
labels: 78% line		71% organism		

text: republicans do believe in a woman's right to control her own body! nos...

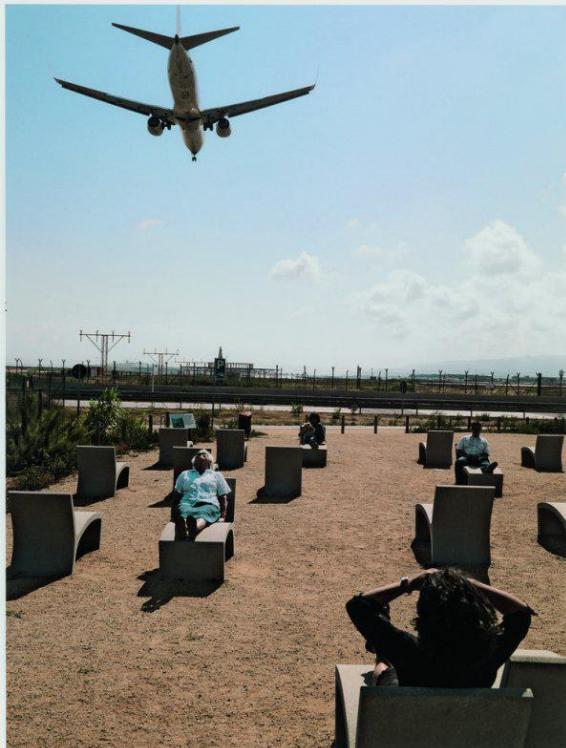
**Microsoft Azure**

category: text	is adult content? False	2% adult
	is racy content? False	3% racy
labels: text		
human face	drawing	
newspaper	black	
sketch	person	
photo	white	
	man	

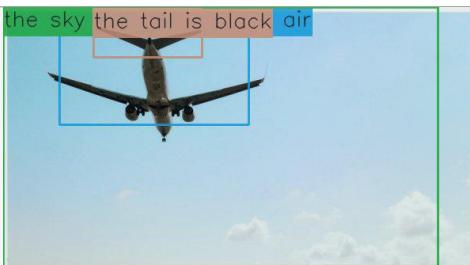
David Goldblatt

Watching Planes Come in, el Mirador del Prat, El Prat del Llobregat. Sèrie:  
"Connexions globals"

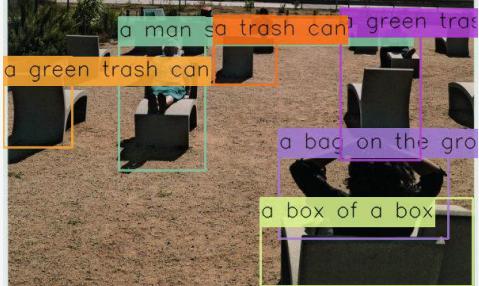
2008



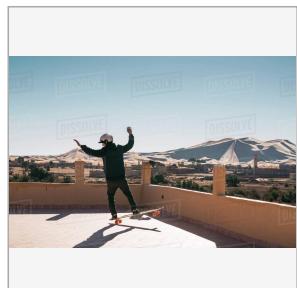
Read as a war, but 100% safe. Plane+people read as shooting range.



the bridge is in the background



visually similar



### ClarifAI

safe for work? 0% nsfw

labels:

99% military  
99% airplane  
98% airport  
98% aircraft

96% people  
96% war  
95% vehicle  
94% travel  
90% air force

90% business  
90% no person  
90% daylight  
89% flight  
88% navy

88% technology  
88% battle  
87% outdoors  
86% helicopter  
84% air

moderation:

99% safe 0% suggestive 0% explicit 0% gore 0% drug

### Amazon Rekognition

labels:

97% person  
97% human  
97% vehicle  
97% aircraft  
97% airplane

97% transportation  
69% soil  
66% play area  
66% playground  
61% airport  
60% airfield  
55% shooting range

Sture Johannesson  
Welcome back! For Ann-Charlotte  
1967



Drawing of a person's backside read as child art - Should that be a class?

## #17 no description



**Microsoft Azure**

category:  
text sign

is adult content? False 1% adult  
is racy content? False 8% racy

labels:  
text  
food  
drawing  
cartoon  
painting

**ClarifAI**

safe for work? 0% nsfw

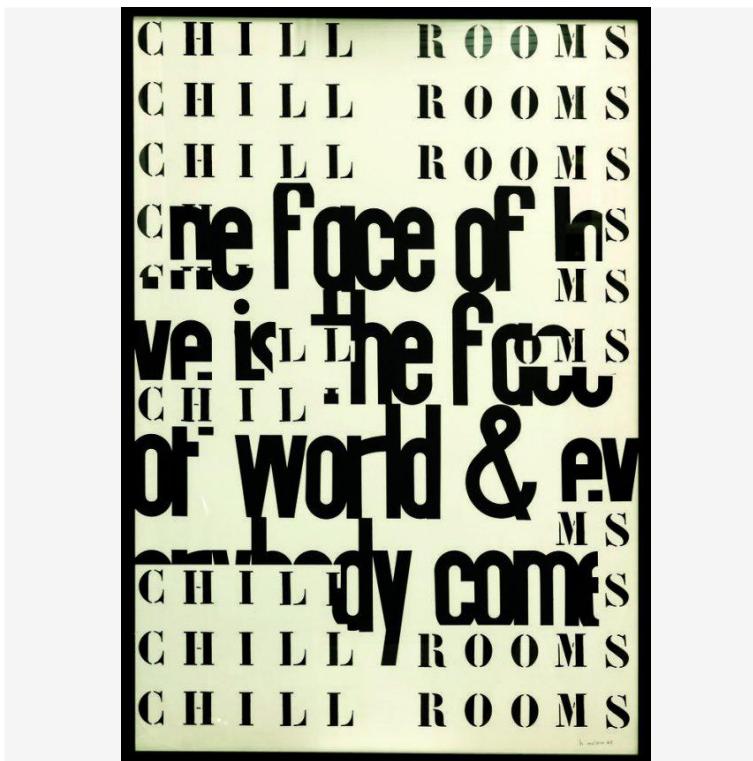
labels:	<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">90%</span> desktop	<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">87%</span> symbol	<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">82%</span> decoration
<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">94%</span> illustration	<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">90%</span> flag	<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">86%</span> patriotism	<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">82%</span> sketch
<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">93%</span> no person	<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">89%</span> art	<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">85%</span> retro	<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">81%</span> color
<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">92%</span> vector	<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">88%</span> celebration	<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">84%</span> paper	<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">80%</span> bill
<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">90%</span> design	<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">88%</span> banner	<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">84%</span> graphic	<span style="background-color: blue; border-radius: 10px; padding: 2px 5px;">79%</span> image

moderation: 79% safe 20% suggestive 0% explicit 0% gore 0% drug

Herminio Molero

Chill Rooms. Série: "Blues"

1968



Bookcover tagged as "hanging white people" and high adult content percentage.

**Microsoft Azure**category:  
text signis adult content? False 52% adult  
is racy content? True 53% racy

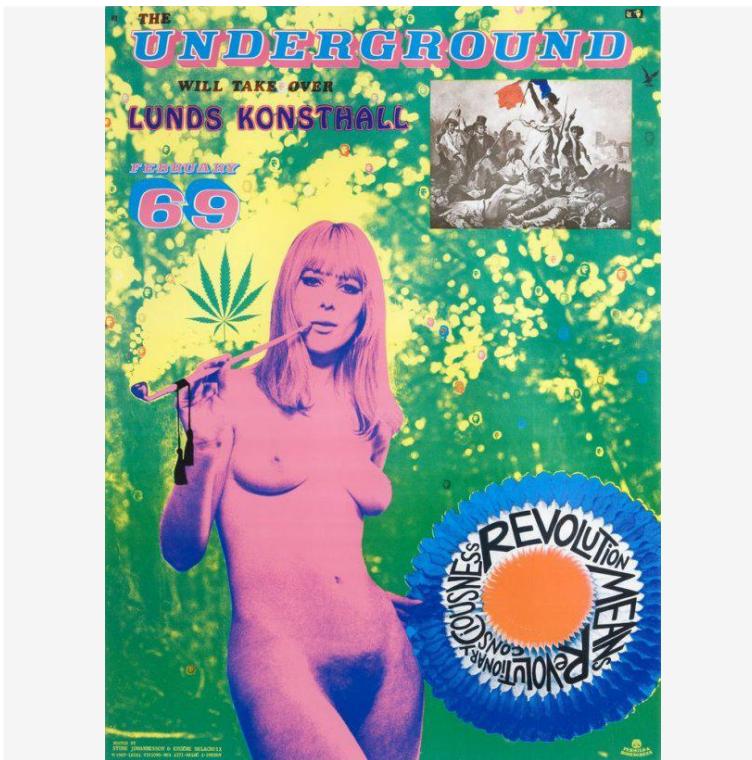
labels:	poster
hanging	font
white	graphic
people	design
text	
typography	

**ClarifAI**safe for work? 2% nsfw

labels:	96% typography	93% paper	89% print
99% text	95% rudiment	93% facts	88% desktop
98% alphabet	94% business	92% no person	88% abstract
97% baptismal font	93% education	91% symbol	85% creativity
96% type	93% typescript	90% bill	84% language

moderation:	99% safe	0% suggestive	0% explicit	0% gore	0% drug
-------------	----------	---------------	-------------	---------	---------

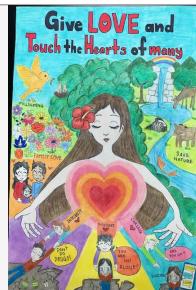
Sture Johannesson  
Revolution Means Revolutionary Consciousness!  
1968



Naked body read as pink shirt with blue cake, also 6% Lady Gaga.



visually similar



ClarifAI

safe for work? 8% nsfw

labels:

93% woman

92% people

92% illustration

87% fashion

87% retro

82% adult

80% art

79% man

78% desktop

77% creativity

77% paper

77% business

75% fun

74% young

74% vertical

74% portrait

72% girl

72% text

6% Lady Gaga

moderation:

0% safe

0% suggestive

99% explicit

0% gore

0% drug

Google Cloud Vision

best guess: poster

violence:

very unlikely

medical:

very unlikely

adult:

possible

spoof:

very unlikely

racy:

very likely

68% poster

labels:

52% book cover

50% illustration

text: the underground will take over lunds konsthall february devos mean. no...

Antoni Cumella

**No title**

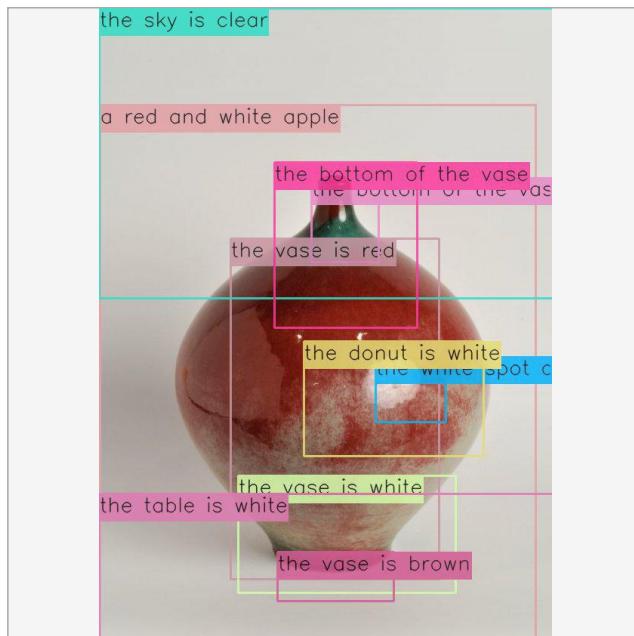
1955



The donut is white. A red and white apple.

## #20 a close up of a vase

59%



<b>ClarifAI</b>	safe for work?	0%	nsfw
<b>labels:</b>			
99% no person	96% food	85% three	78% color
98% one	94% fruit	84% two	77% ingredients
98% grow	93% cutout	82% medicine	77% bowl
98% still life	93% container	78% pottery	77% people
	89% tableware	78% art	74% round out
<b>moderation:</b>			
99% safe	0% suggestive	0% explicit	0% gore
			0% drug

<b>Microsoft Azure</b>	category: others	is adult content? False	3% adult
<b>labels:</b>			
sitting	plant	porcelain	bottle
vase	background	green	bowl
table	fruit	surface	close
apple	red	brown	large
small	ceramic ware	black	food
	white	orange	

# **COLLABORATORS**

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