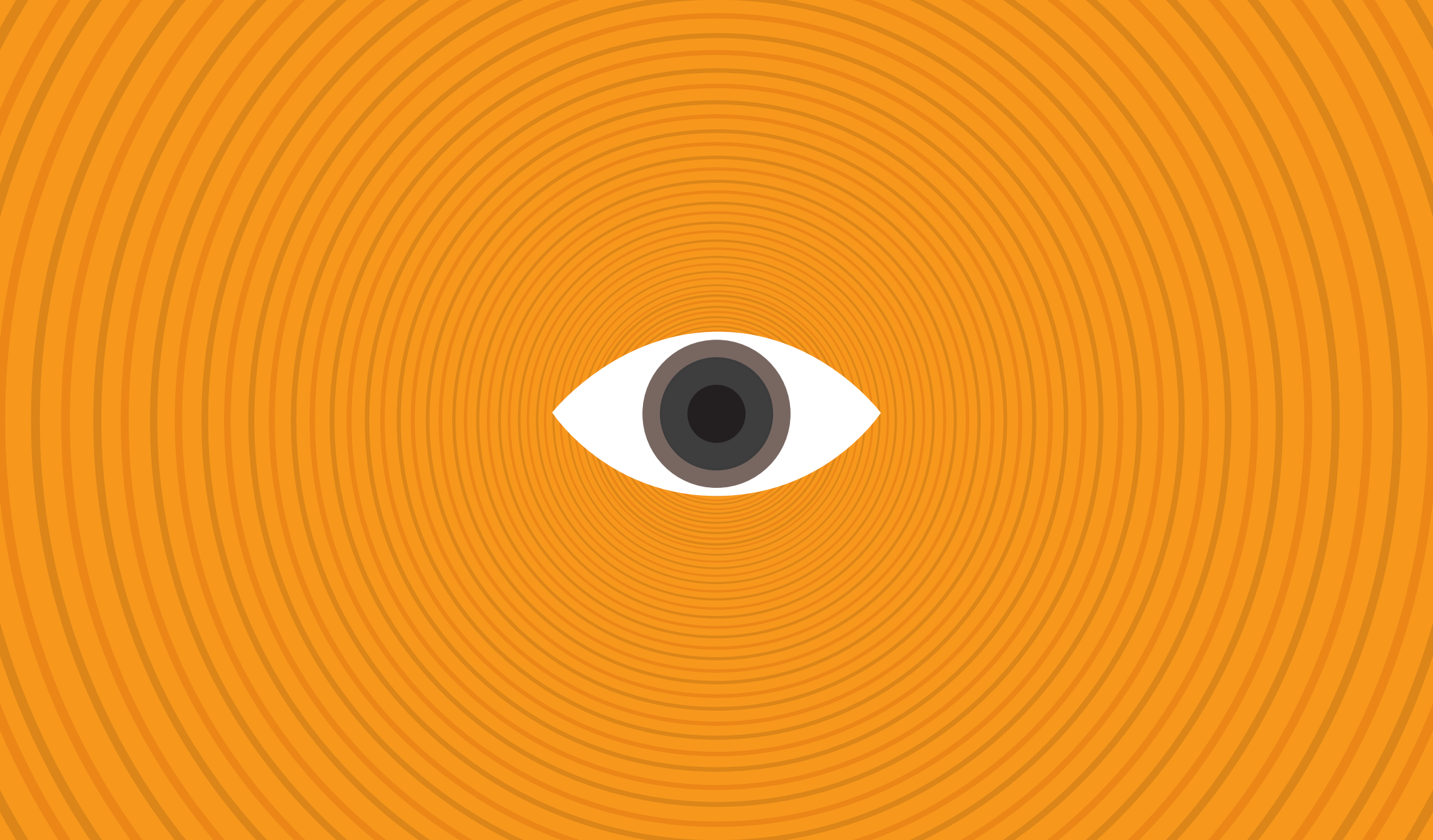


SOUND

AS A CALL WAS OUR WARNING,
AS SPEECH BECOMES OUR THOUGHTS.
AS MUSIC BECOMES OUR FEELINGS.

SIGHT *of* SOUND

an expression of *emotions*

SIGHT *of* SOUND

an *intuitive* mode of communication

an expression of *emotions*

SIGHT *of* SOUND

simulate a *synesthetic effect*

an *intuitive* mode of communication

an expression of *emotions*

SIGHT *of* SOUND

by codification of *colour on sounds*

simulate a *synesthetic effect*

an *intuitive* mode of communication

an expression of *emotions*

SIGHT *of* SOUND

by codification of *colour on sounds*

simulate a *synesthetic effect*

an *intuitive* mode of communication

an expression of *emotions*

COLOURS

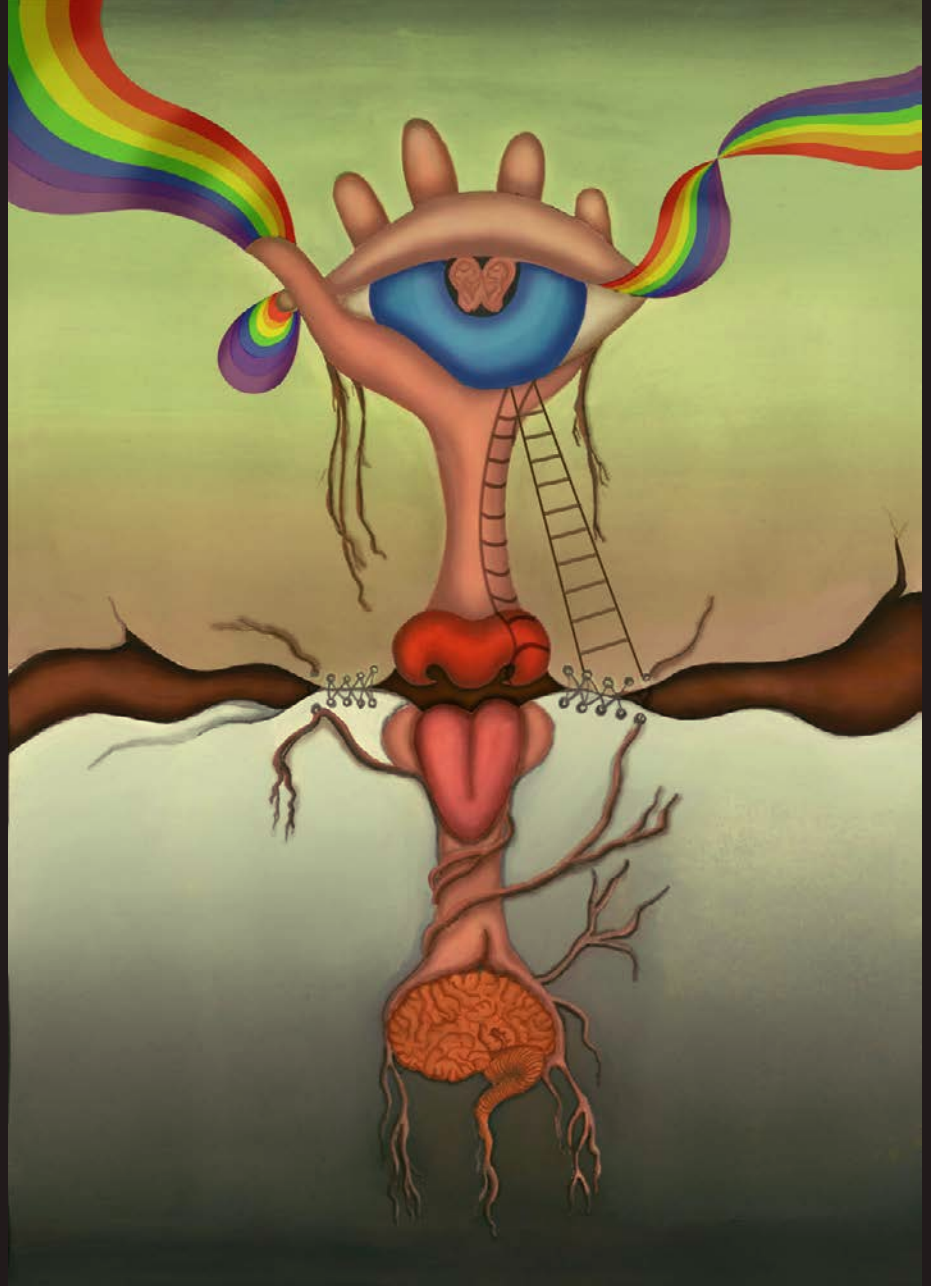
"What would be truly surprising would be to find that sound could not suggest colour, that colours could not evoke the idea of a melody, and that sound and colour were unsuitable for the translation of ideas, seeing that things have always found their expression through a system of reciprocal analogy."

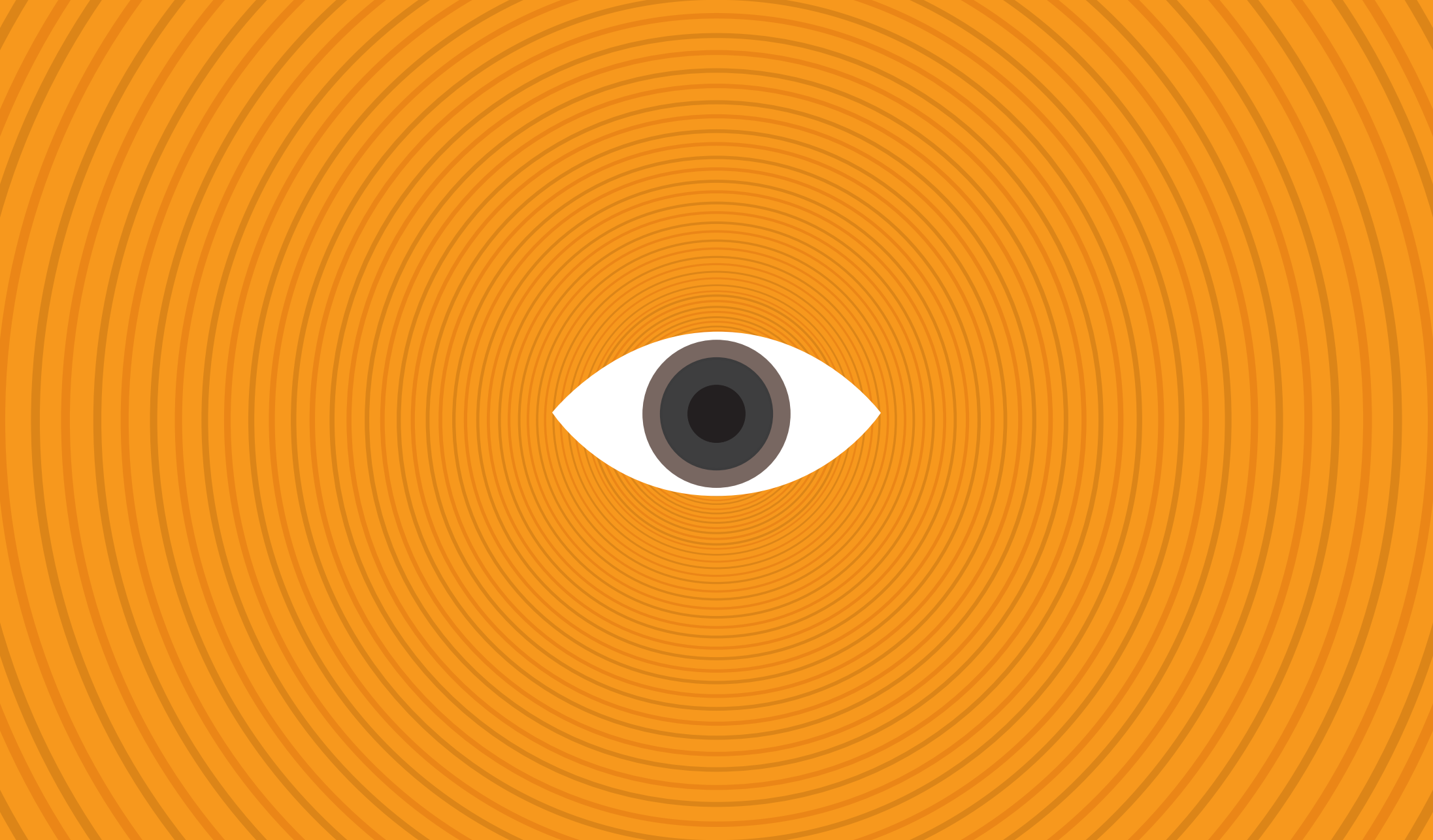
BAUDELAIRE, CHARLES,
The Painter of Modern Life and Other Essays, transl. and ed. by Jonathan, Mayne (London:Phaidon, 1964),p. 116.

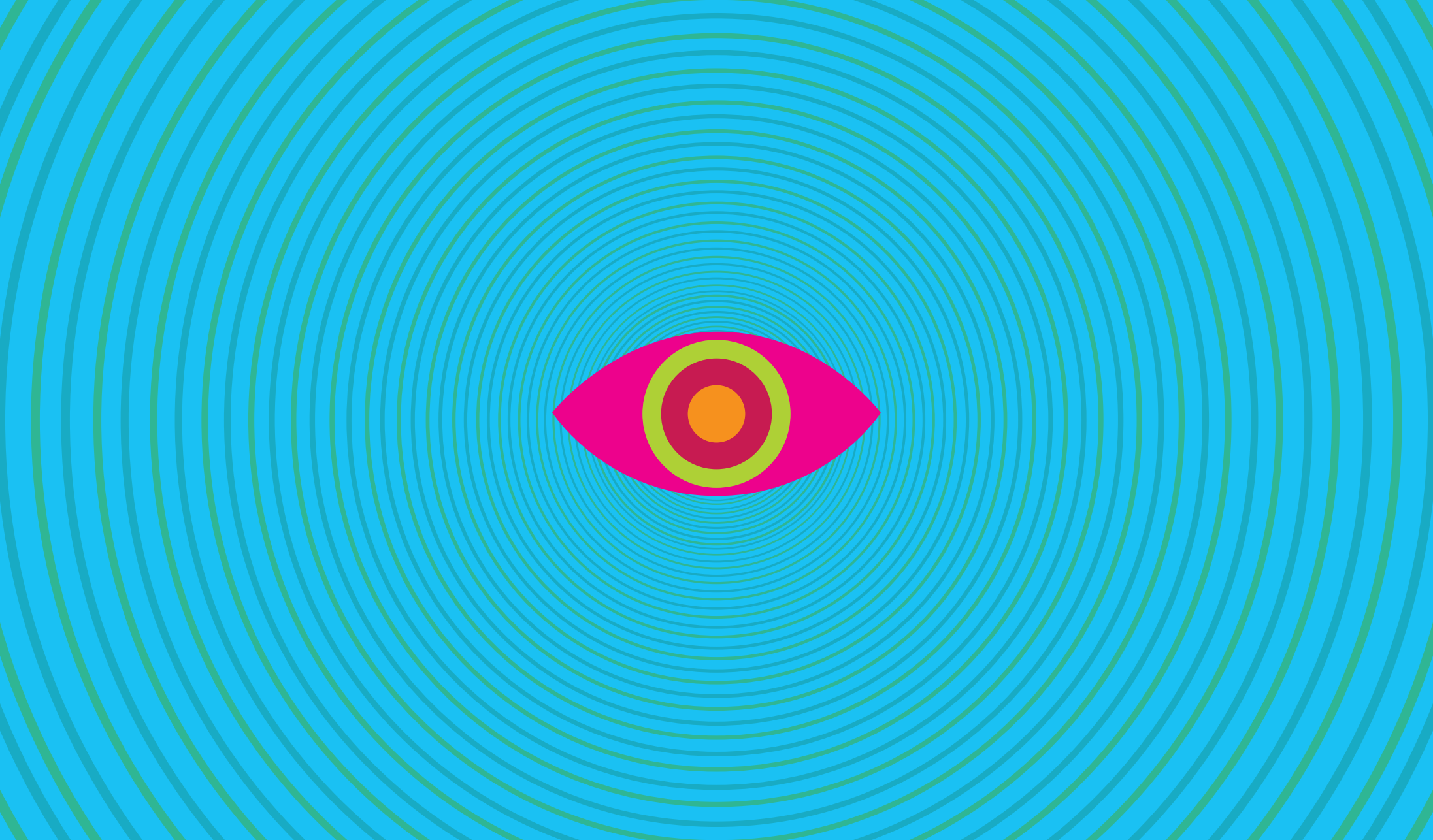
/ˌsɪn əsˈθi ʒə, -ʒi ə, -zi ə/

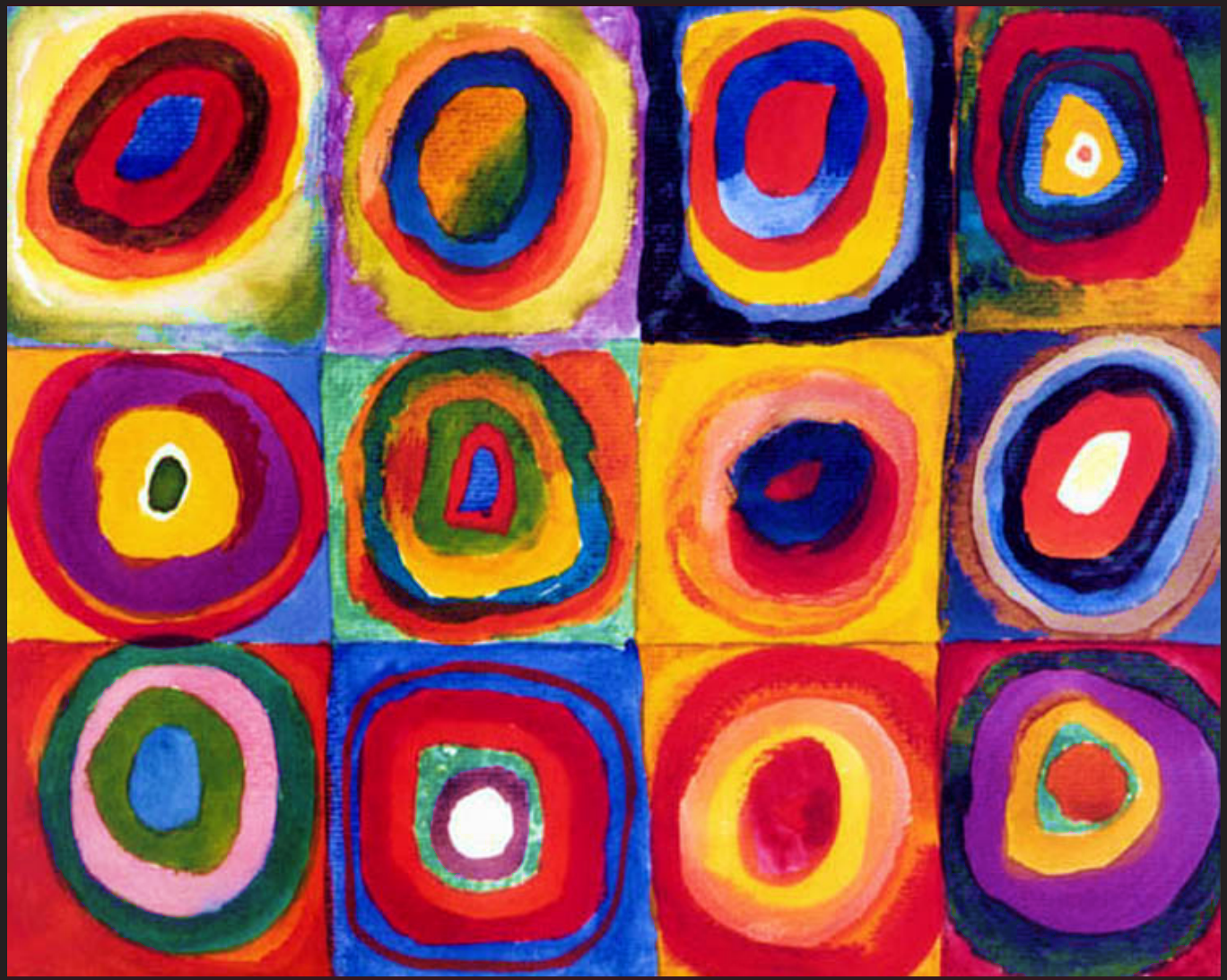
sin-uh s-thee-zhee-uh

SYNESTHESIA





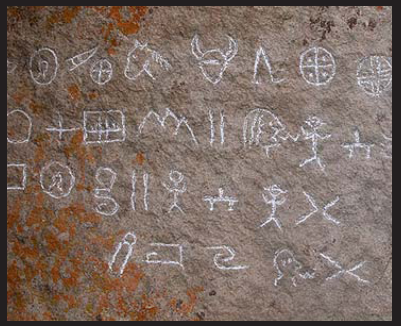


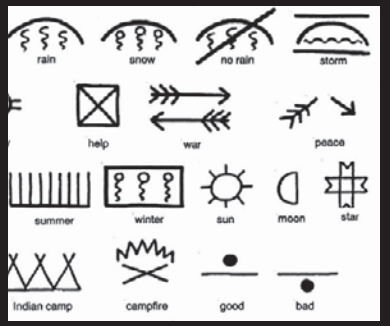


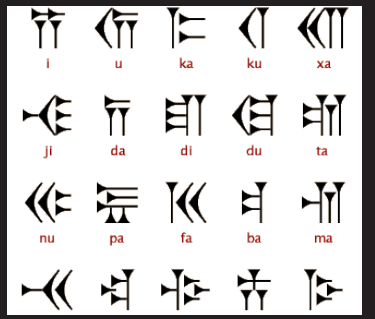
CONSTRAINT 1

OBJECTIVE**
CODIFICATION

** just as music



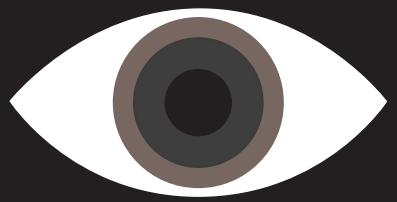




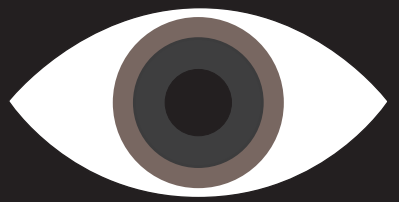
EVOLUTION OF THE ALPHABET

PHOENICIAN	EARLY HEBREW	EARLY ARAMAIC	EARLY GREEK	CLASSICAL GREEK	ETRUSCAN	EARLY LATIN	CLASSICAL LATIN	RUSSIAN-CYRILLIC	GERMAN-GOTHIC	MODERN LATIN
𐤀	𐤀	𐡀	Α	Α	Α	Α	A	А	𝔄	A a
𐤁	𐤁	𐡁	Β	Β	𐌂	Β	B	Б	𝔅	B b
𐤂	𐤂	𐡂	Γ	Γ	𐌃	<	C	Г	ℭ	C c
𐤃	𐤃	𐡃	Δ	Δ	𐌄	D	D	Д	𝔇	D d
𐤄	𐤄	𐡄	Ε	Ε	𐌅	Ε	E	Е	𝔈	E e
𐤅	𐤅	𐡅	Ϝ	Ϝ	𐌆	Ϝ	F	Ф	𝔉	F f
𐤆	𐤆	𐡆	Ζ	Ζ	𐌇	<	G	Г	𝔊	G g
𐤇	𐤇	𐡇	Η	Η	𐌈	Η	H	И	ℌ	H h
𐤈	𐤈	𐡈	Θ	Θ	𐌉	Ι	I	І	ℑ	I i
𐤉	𐤉	𐡉	Ι	Ι	𐌊	Ι	J		𝔍	J j
𐤊	𐤊	𐡊	Κ	Κ	𐌋	Κ	K	К	𝔎	K k
𐤋	𐤋	𐡋	Λ	Λ	𐌌	Ⅼ	L	Л	𝔏	L l
𐤌	𐤌	𐡌	Μ	Μ	𐌍	Μ	M	М	𝔐	M m
𐤍	𐤍	𐡍	Ν	Ν	𐌎	Ν	N	Н	𝔑	N n
𐤎	𐤎	𐡎	Ο	Ο	𐌏	Ο	O	О	𝔒	O o
𐤏	𐤏	𐡏	Π	Π	𐌐	Γ	P	П	𝔓	P p
𐤐	𐤐	𐡐			𐌑	Q	Q		𝔔	Q q
𐤑	𐤑	𐡑	Ρ	Ρ	𐌒	Ρ	R	Р	ℜ	R r
𐤒	𐤒	𐡒	Σ	Σ	𐌓	Տ	S	С	𝔖	S s
𐤓	𐤓	𐡓	Τ	Τ	𐌔	Τ	T	Т	𝔗	T t
𐤔	𐤔	𐡔	Υ	Υ	𐌕	V	U	У	𝔘	U u
𐤕	𐤕	𐡕	Υ	Υ	𐌖	V	V		𝔙	V v
			Υ	Υ	𐌗	V	W		𝔚	W w
			Ξ	Ξ	𐌘	X	X		𝔛	X x
					𐌙	Υ	Y		𝔜	Y y
			Ζ	Ζ	𐌚	Ζ	Z	З	ℨ	Z z

This table shows the evolution of the alphabet from the ancient Phoenician syllabary on which Greek script was based. The Russian Cyrillic alphabet was derived directly from Greek, whereas the English alphabet came from Greek through the medium of Etruscan and Latin.



Aa/ए



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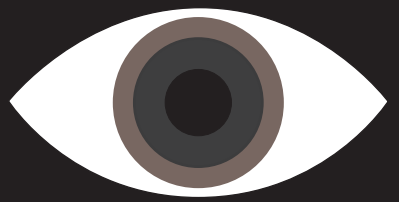


Aa/ए

CONSTRAINT 2

COHERENT**
CONNECTION

** Unlike alphabets

STUDY

COLOUR to MUSIC

World

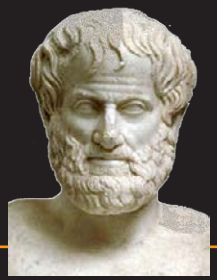
Aristotle

seven musical intervals

seven colours

seven planets

(discovered then)



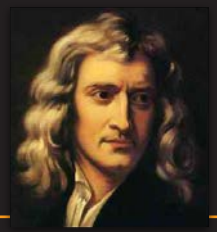
439b–442a

Aristotle, De sensu et sensibilibus,

Newton

tonal intervals

spectrum (vibgyor)



1672

Louis-Bertrant Castel

musical notes

colours

1725

1st optical harpsicord

pressing every key would open a shaft of coloured light

COLOUR to MUSIC

India

Indian Classical Music

Hindustani & Caranatic

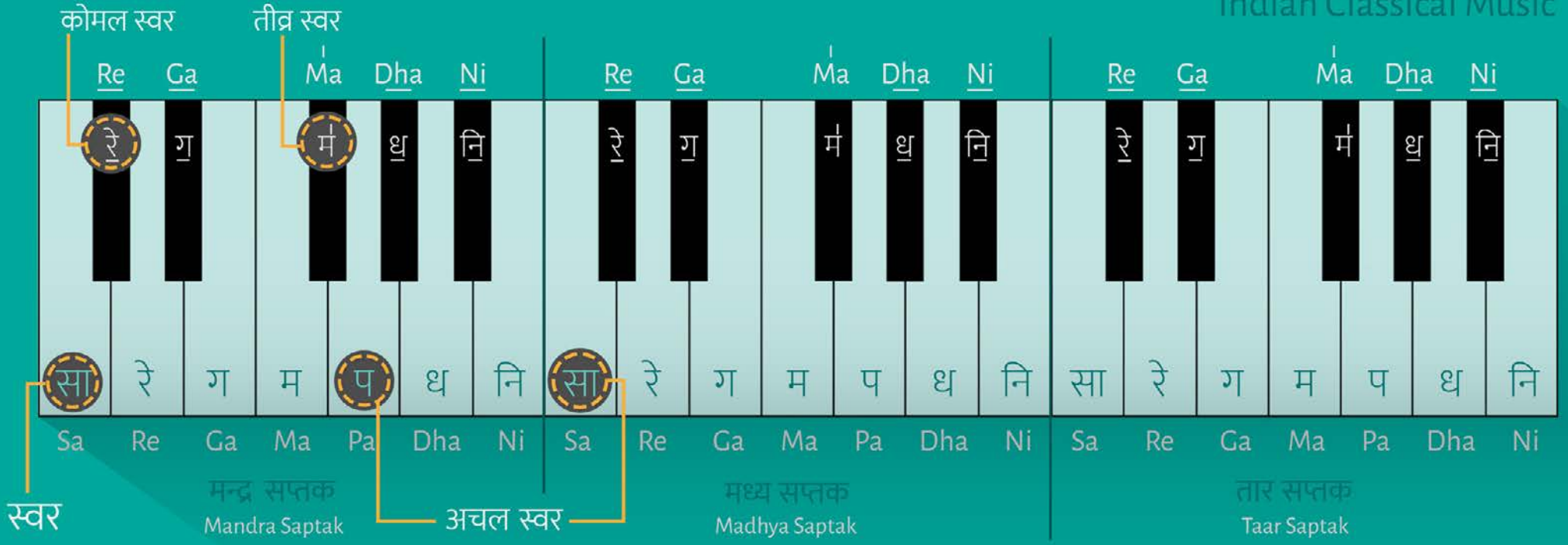
raga राग

means *'colour'* or *'that which colours the mind'*

an *elementary framework* of five or more notes/ swaras

basis of a *melody*

भारतीय शास्त्रीय संगीत
Indian Classical Music



COLOUR to MUSIC

India

Indian Classical Music

Hindustani & Caranatic

raga राग

associated with
a time of the day
and/or *seasons*

are said to
create a mood
or induce *Rasa*

shringar
hasya
karuna
raudra
veera
bhayanaka
bibhatsa
adbhuta
shanta

COLOUR to MUSIC

India

Indian Classical Music

Hindustani & Caranatic

raga राग

associated with
a time of the day
and/or *seasons*

are said to
create a mood
or induce *Rasa* —— *Colours*

shringar	Light Green	bhayanaka	Black
hasya	White	bibhatsa	Blue
karuna	Grey	adbhuta	Yellow
raudra	Red	shanta	White
veera	Golden		

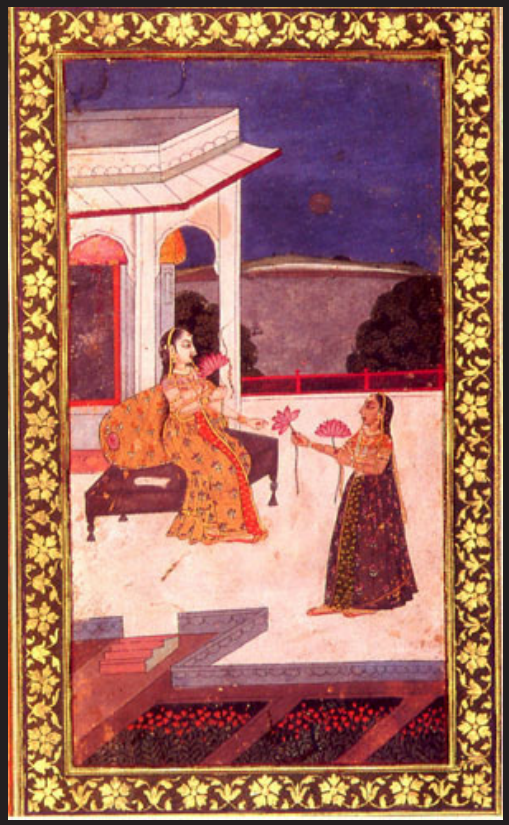
रागमाला

paintings

Raga Hindol

Raga Hindol

Raga Hindol



Raga Yaman

राग & रस

राग & रस

psychophysical dimensions

- tempo
- timbre
- rhythmic complexity
- melodic complexity
- pitch

- shringar
- hasya
- karuna
- raudra
- veera
- bhayanaka
- bibhatsa
- adbhuta
- shanta

A Cross-Cultural Investigation of the Perception of Emotion in Music: Psychophysical and Cultural Cues

by **Laura-Lee Balkwill** & **William Forde Thompson**;
Atkinson College, York Univarsity

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राग & रस

psychophysical dimensions

- tempo
- timbre
- rhythmic complexity
- melodic complexity
- pitch

- shringar — *Raga Khamaj*
- hasya — *Raga Khamaj*
- karuna — *Raga Bhairavi*
- raudra — *Raga Malkauns/ Hindol*
- veera
- bhayanaka
- bibhatsa
- adbhuta
- shanta — *Raga Yaman*

A Cross-Cultural Investigation of the Perception of Emotion in Music: Psychophysical and Cultural Cues
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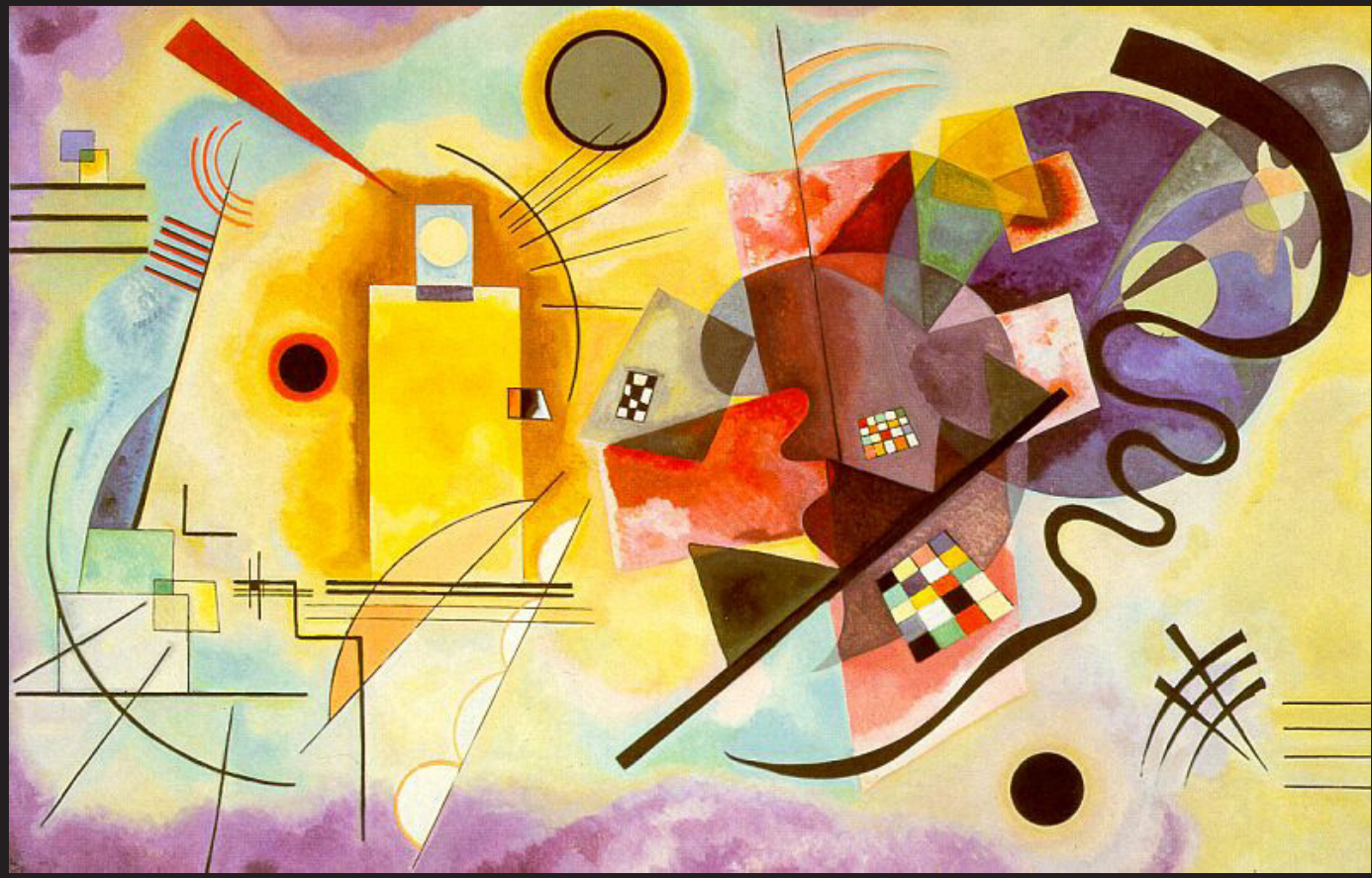
© 1999 by the regents of the University of California

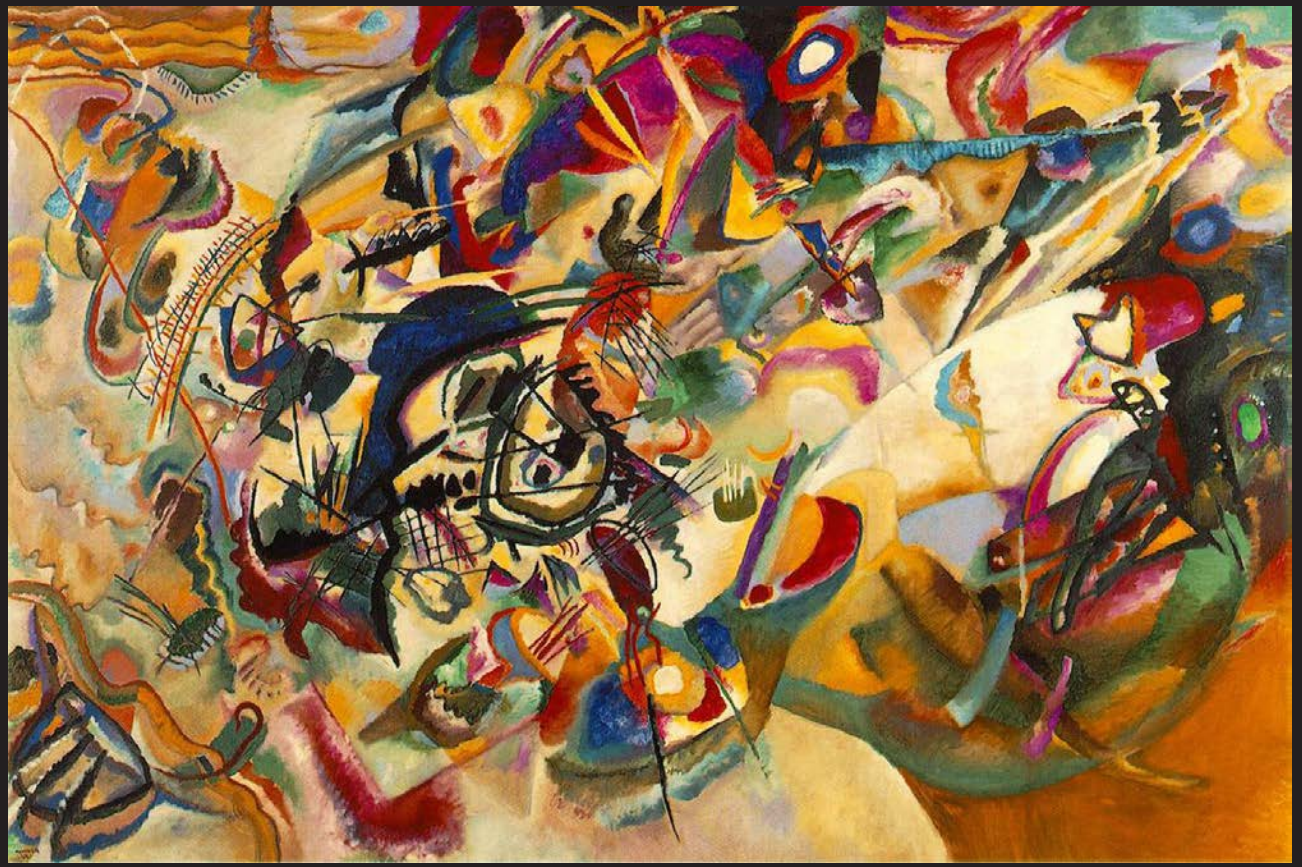
MUSIC to COLOUR

Art & New Media

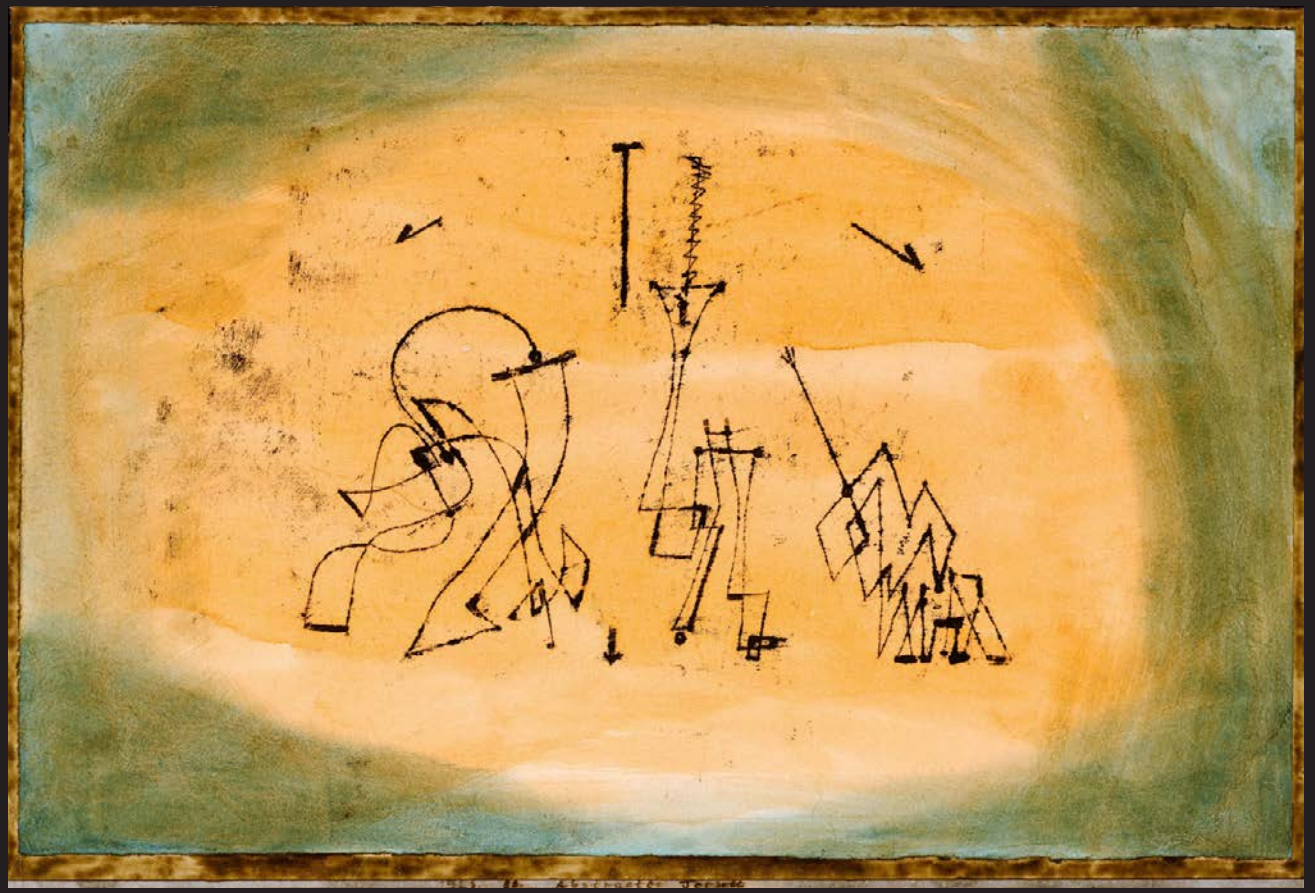
"...abstract art, what people would perhaps consider the most emotionally subjective form of art, is actually completely objective... the emotional objectivity of abstract art lies in the characteristics of the colors and their interactions with one another."

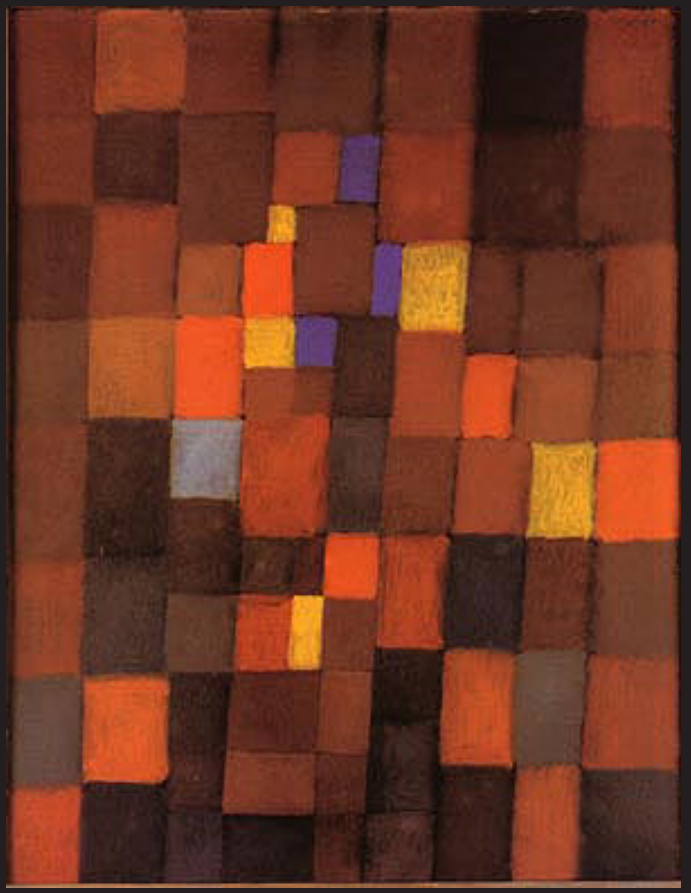
Wassily Kandinsky





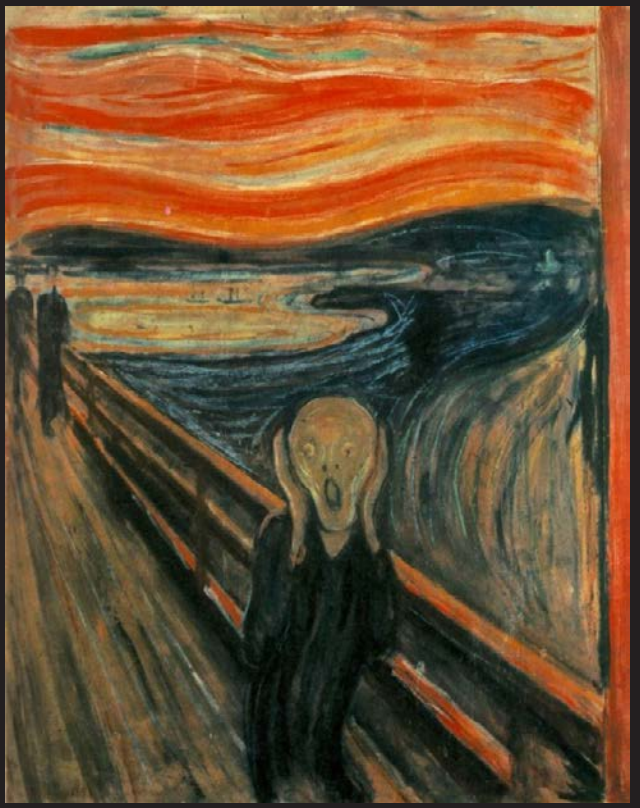
WASSILY KANDINSKY



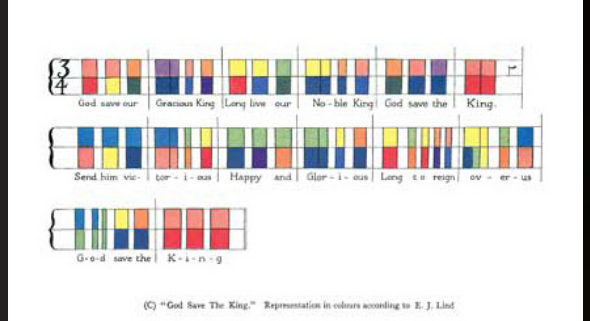


PAUL KLEE

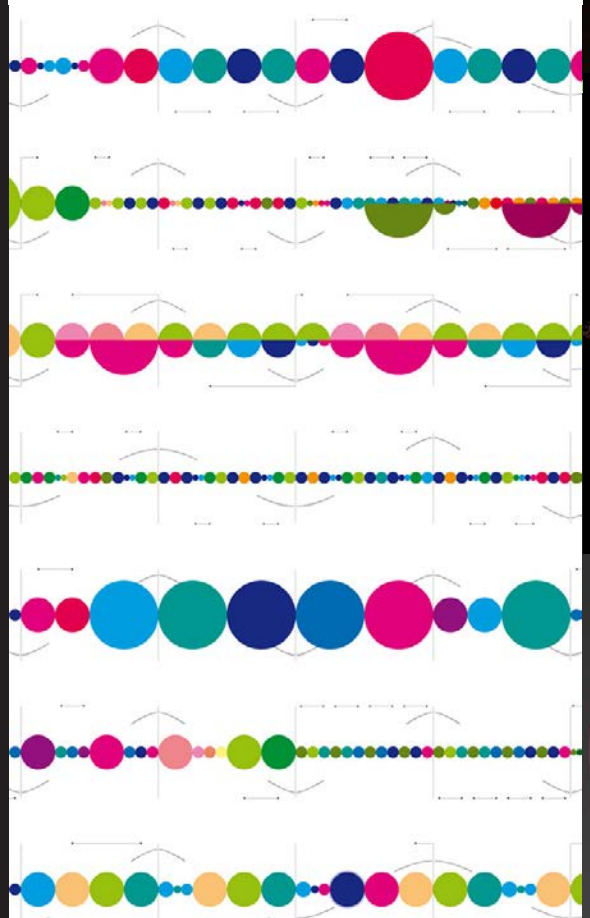
UMBERTO BOCCIONI

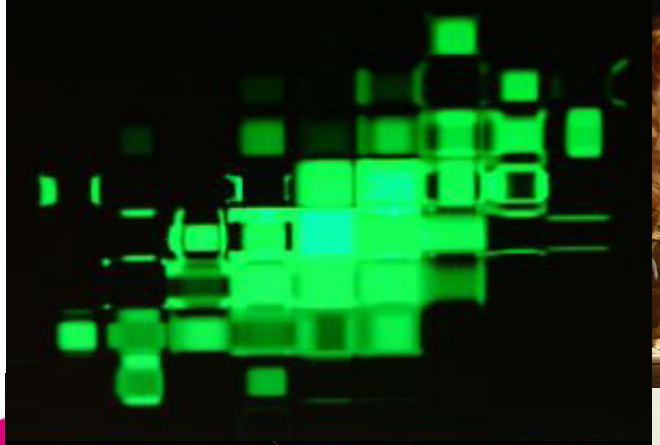


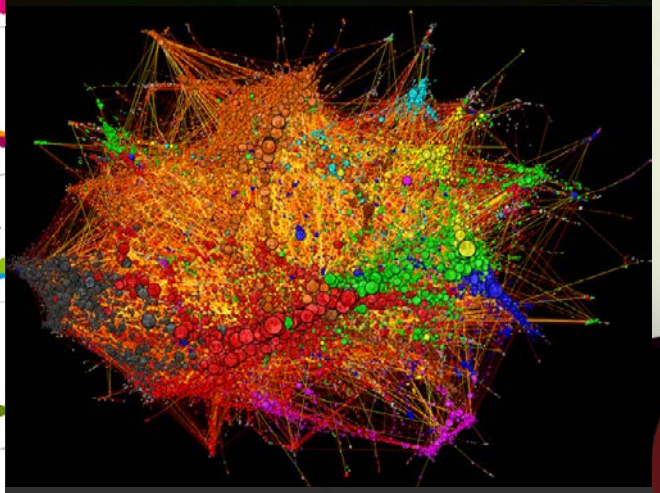
EDVARD MUNCH

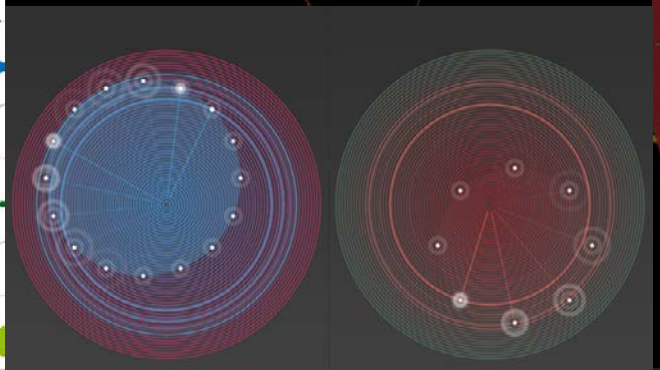


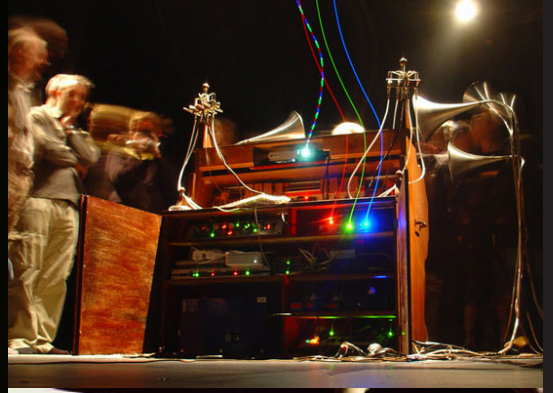
(C) "God Save The King." Representation in colours according to E. J. Lind

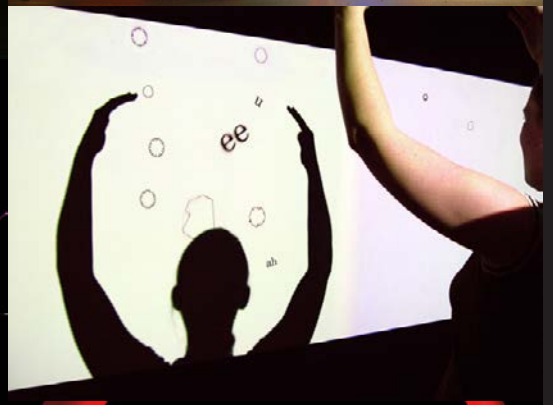


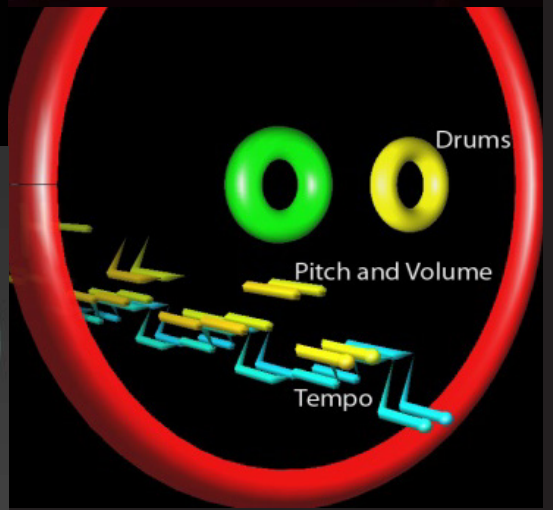












mostly self
expression

visual art for
aesthetic
pleasure

PRIMARY RESEARCH

DEFINING COLOURS

To know what kind of *colour palette* can express the chosen emotions and to *substantiate* the reason for using *movement in colours* as well as to understand *which elements of art* or visuals *play a vital role* in evoking emotions in the viewers I created a survey.

SURVEY **

CAN ART REALLY EVOKE AN EMOTION?

DO THESE EMOTIONS VARY FROM PERSON TO PERSON?

OR ARE THEY SIMILAR FOR MOST PEOPLE?

** collected 50 complete responses and around 76 partial surveys where 16 surveys had data for 6 or more than 6 questions and thus were considered in the inferences.

To know what kind of *colour palette* can express the chosen emotions and to *substantiate* the reason for using *movement in colours* as well as to understand *which elements of art* or visuals *play a vital role* in evoking emotions in the viewers I created a survey.

SURVEY **

12 Paintings (largely from the abstract expressionist movement)

Mix of *Single* Paintings and *Two* Paintings put together

Choice of Images – Four *chosen rasas or emotions*
Karuna, Raudra, Hasya/Sringhar and Shant.

Order to expose the survey-takers to *a range of visual variables – colours, strokes, painting technique, content*

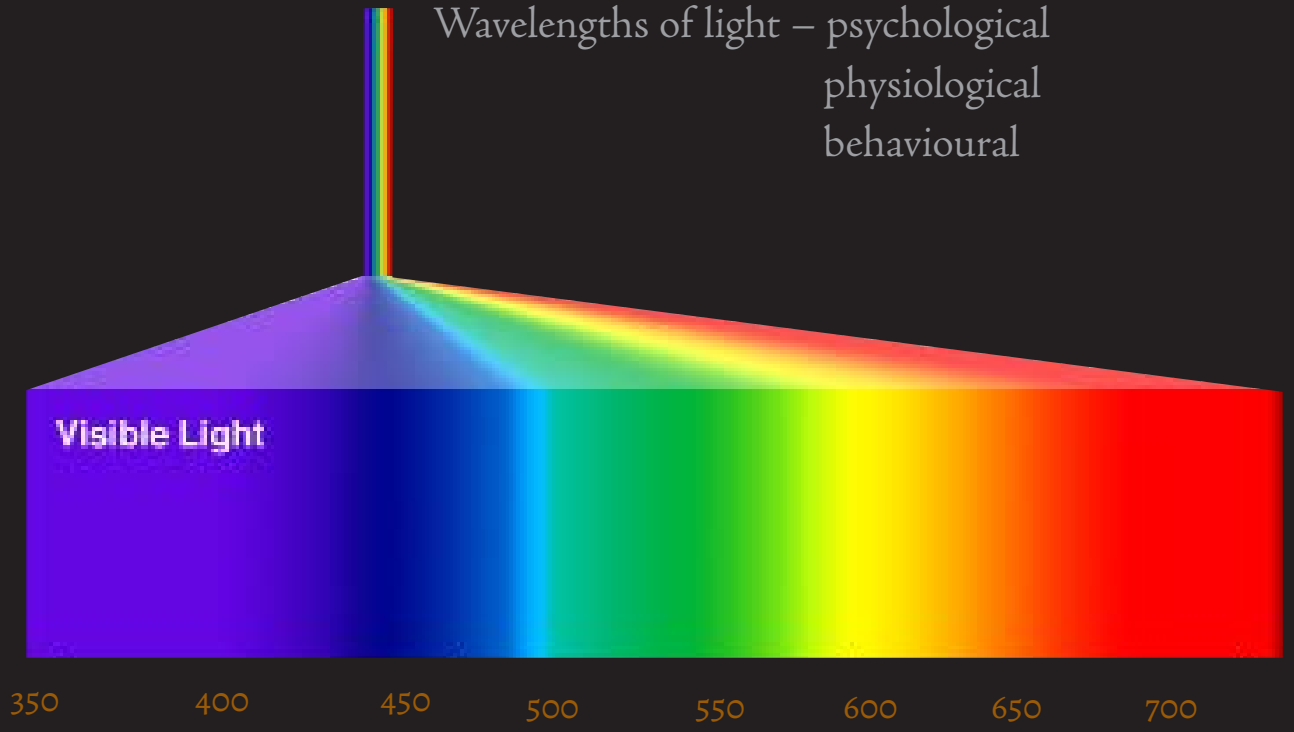
Paintings were placed – *less abstract to more abstract*

most questions as *subjective*

** collected 50 complete responses and around 76 partial surveys where 16 surveys had data for 6 or more than 6 questions and thus were considered in the inferences.

Light – Human Circadian Rhythm

Wavelengths of light – psychological
physiological
behavioural

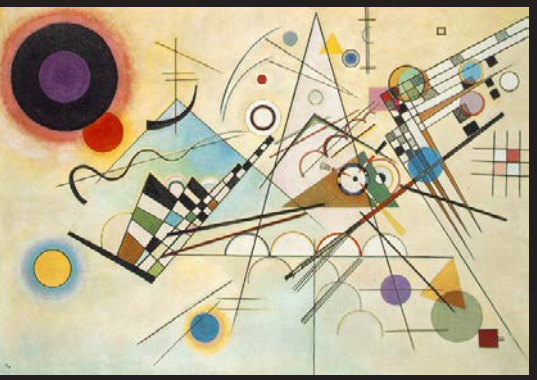


Source: http://deserthighlandspr.com/wp-content/uploads/2013/02/Visible-spectrum.jpg

** *(Goethe) suggest that there are positive and negative sides of colours where yellow, red-yellow (orange), yellow-red lie on the positive side triggering positive emotions like quick, lively or aspiring. He states that Yellow is the colour nearest to light while, blue has a slight darkness in it.*

Johann Wolfgang von Goethe, published his *'Theory of Colours'*

Colour Psychology and Colour Therapy: Caveat Emptor; Zena O'Connor, © 2010 Wiley Periodicals, Inc.



PAINTINGS USED FOR SURVEY

QUESTIONS

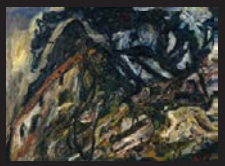
- Does the painting generate an emotion? If yes, what kind of emotion, please elaborate?
- Rate the intensity of your emotions (on a scale of extremely negative – Nothing – extremely positive; this had values of -3 to +3)
- Which elements help generate this emotion? Please elaborate your choice of response.
  - – Chosen Colours
  - – Painting Techniques
  - – Content or Characters in the painting
  - – Movement of strokes (soft and flowy/pointy and jagged)
  - – Nothing

- Do the above two paintings generate an emotion? If yes, what kind of emotion, please elaborate?
- Rate the intensity of your emotions for both (on a scale of extremely negative – Nothing – extremely positive; this had values of -3 to +3)
- Do you think the emotions are similar or dissimilar? Kindly state reasons for the same.
- Which elements help generate this emotion? Please elaborate your choice of response.
  - – Chosen Colours
  - – Painting Techniques
  - – Content or Characters in the painting
  - – Movement of strokes (soft and flowy/pointy and jagged)
  - – Nothing

RESULTS

NEGATIVE EMOTIONS

Does the painting generate an emotion? If yes, what kind of emotion, please elaborate?



according ambiguous anger art bore certain **chaos** clumsy cold **confusion** curiosity **dark** design destruction **disgust** **disturbed** **dread** dull **evil** examination **generate** hate indeed irksome jolly life manner matter morbid morose necessarily **negative** none putrid revulsion **sad** sake **scary** schizophrenic sinister slippery **struggle** sunny sure **taking** **trap** ugly vaguely warrior~ fighter wrath

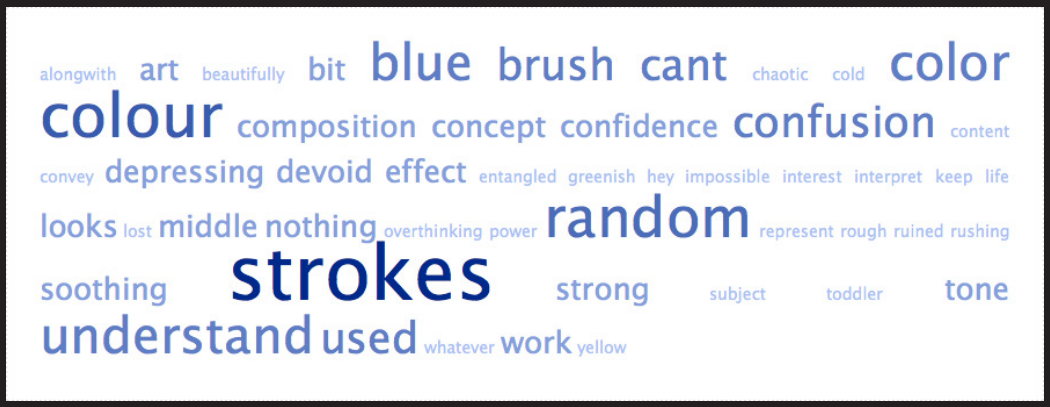
alarmed **alone** amazed anger **anxiety** **bad** bold **chaos** chaotic compel complementary **dark** **deep** **despair** **disturbing** **doom** edginess eeriness **evoke** **face** **fear** felling flow **hear** **helplessness** **horror** impending later life living man moment mysterious nightmare orange panicking **past** relaxed **scared** **scary** **scream** security **shock** slipping **sorrow** surprise **terror** whimsy **whole** woman

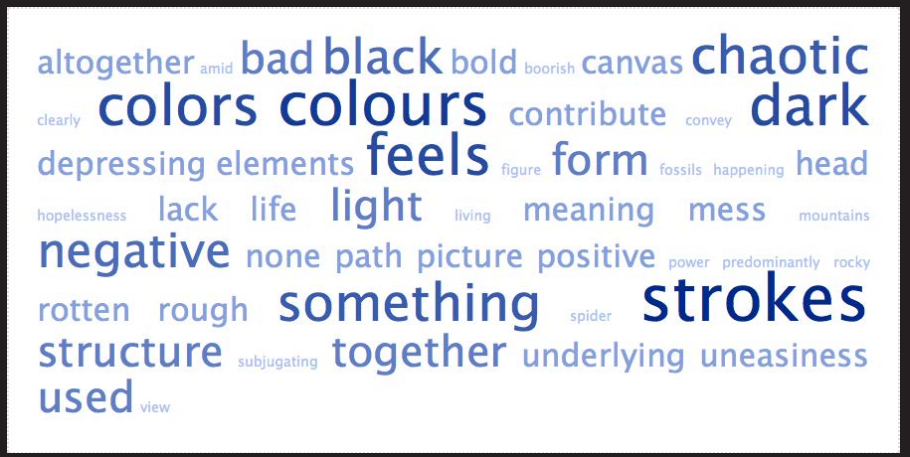
abstract ambiguous anger apathy art behaviour **calm** cant caught certainty chaotic choppiness claustrophobic cofusion **cold** **confused** content **control** design dissatisfaction **disturbed** **dread** dull empathy evokes forward **gloomy** grab holds keep life looks manage messy negative objective people positive ship significant **slightly** speed **storm** **stormy** strong struggled stuck sympathy upheaval waves

anger **art** ate **chaos** chaotic colour **conflict** **confusion** cruel design direction **disturbance** fights flowing freedom give **growth** idea image indicates inspiring lacks life **looks** magnanimity **messy** **nature** nourishing ok oooo pallete pandemonium particular **people** person picture plans **positive** provide **revolution** sharp **something** talking technique top ughhhh **understated** used **war** watching

NEGATIVE EMOTIONS

Which elements help generate this emotion? Please elaborate your choice of response.

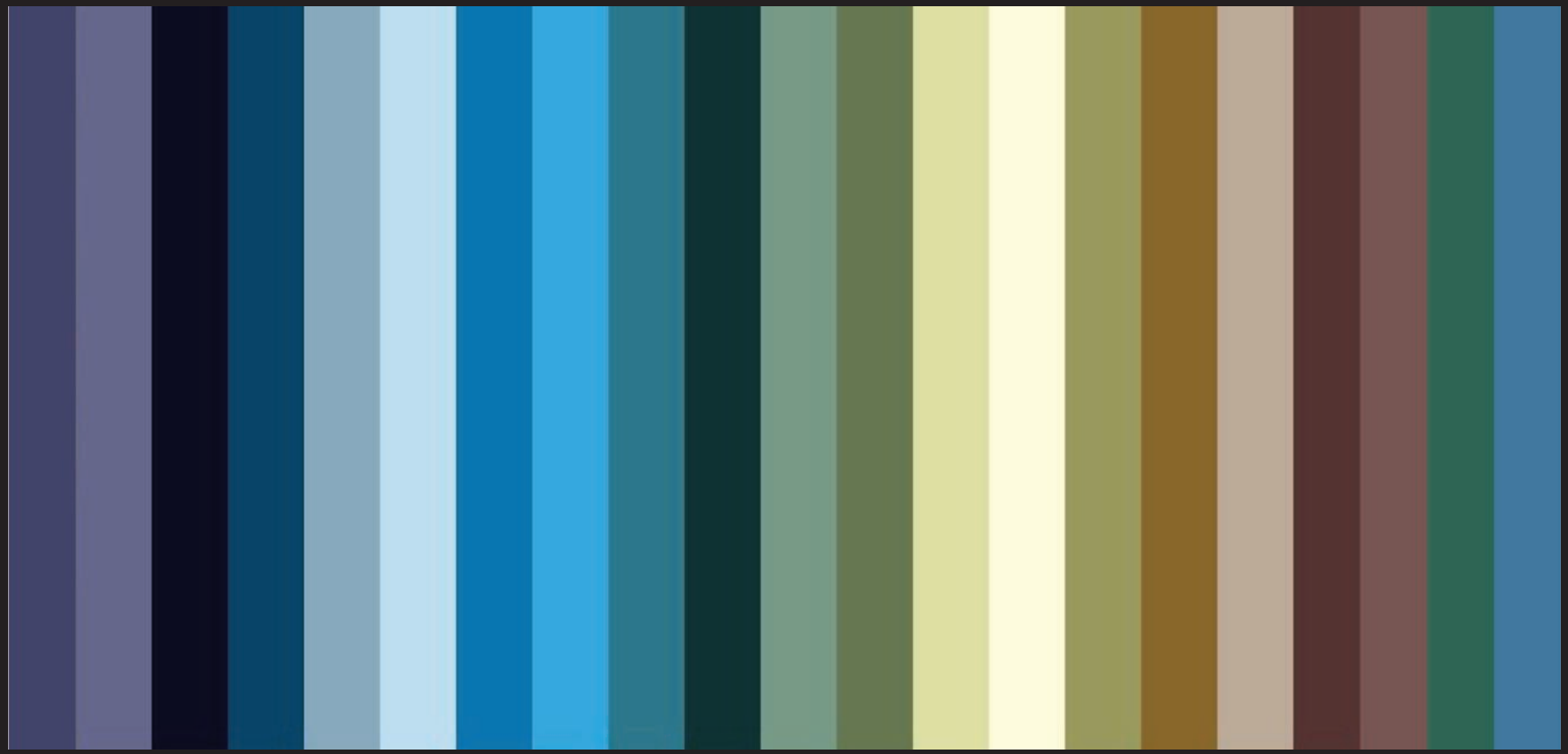




COLOURS Dark, high contrast, rotten, murky, greys, blues, depressing tones, Dull, BLACK, Cold

STROKES Broken, Rash, Rough, Chaotic, Boorish, Hurried, Disturbance, Random, Ragged, Bold, Thick

Colour Pallete of 21 colours for
'Raudra'



Colour Pallete of 21 colours for
'Karuna'

POSITIVE EMOTIONS

Does the painting generate an emotion? If yes, what kind of emotion, please elaborate?

agitated brings **calm** cases **chaos** **confusion** creates curiosity **danger** depressive destruction **drama** element energy **enlightened** **evoke** faith fierce fiery figure freedom gone happen **hazy** helplessness **hope** **hopelessness** humility inconsequential inner **journey** later losing lost middle mystical **peace** reaching religious retrospective scheme **sea** **something** **storm** **survival** toil top **towards** **turmoil** waves

abstract accord animals beacsue brain **bright** **brighten** brightly **celebration** childlike **colors** **confusion** **done** dresses **evoke** experience experimentation feelin female forms frankly **fresh** geometrical **give** growing **growth** induces interpret light lil meaning **mood** none **nothing** numbers **organic** placement **playful** **positive** presents quixotic richness **shapes** **something** sophisticated supplement tiny trippiness used wanting

anger **bad** based **beginning** **bloom** **calm** clearly **cold** collected **convey** **cool** **dark** deep **depressed** **different** **energetic** **energy** **excited** **full** **gloomy** growing **hand** **hope** inducing **life** **light** **loneliness** **looks** lower **memory** **negative** **night** **peaceful** **phase** **positive** pros **relaxed** **remind** **resembles** rough **sea** solace stabilizes sun **sunrise** twilight **used** wanting **warm** **warmth**

along authentic battle **birth** **calm** calmth **cold** **colors** content contrasting design divine dumb energetic energy **enlightened** exactly extensive **flower** form **half** heaven heavenly infertility insides life light longer lower **meditate** **peace** peasce power **relax** religious **remind** restless **serene** sexual shades sit **something** **soothing** space **spiritual** spiritualistic strong top **tranquility** wars

bedtime **calm** chill **city** cold concrete content convey coz **dark** **depressive** diagonal door draw **gentle** **gloomy** homely horizon illusion jigsaw **light** logic lonesome mysterious name negative **night** **pattern** **peace** pity places **relaxed** settling shadows shady shapes **sleep** **slightly** small **solitude** **soothing** stillness structured texture **tranquility** unable uniformity wanting winter wow

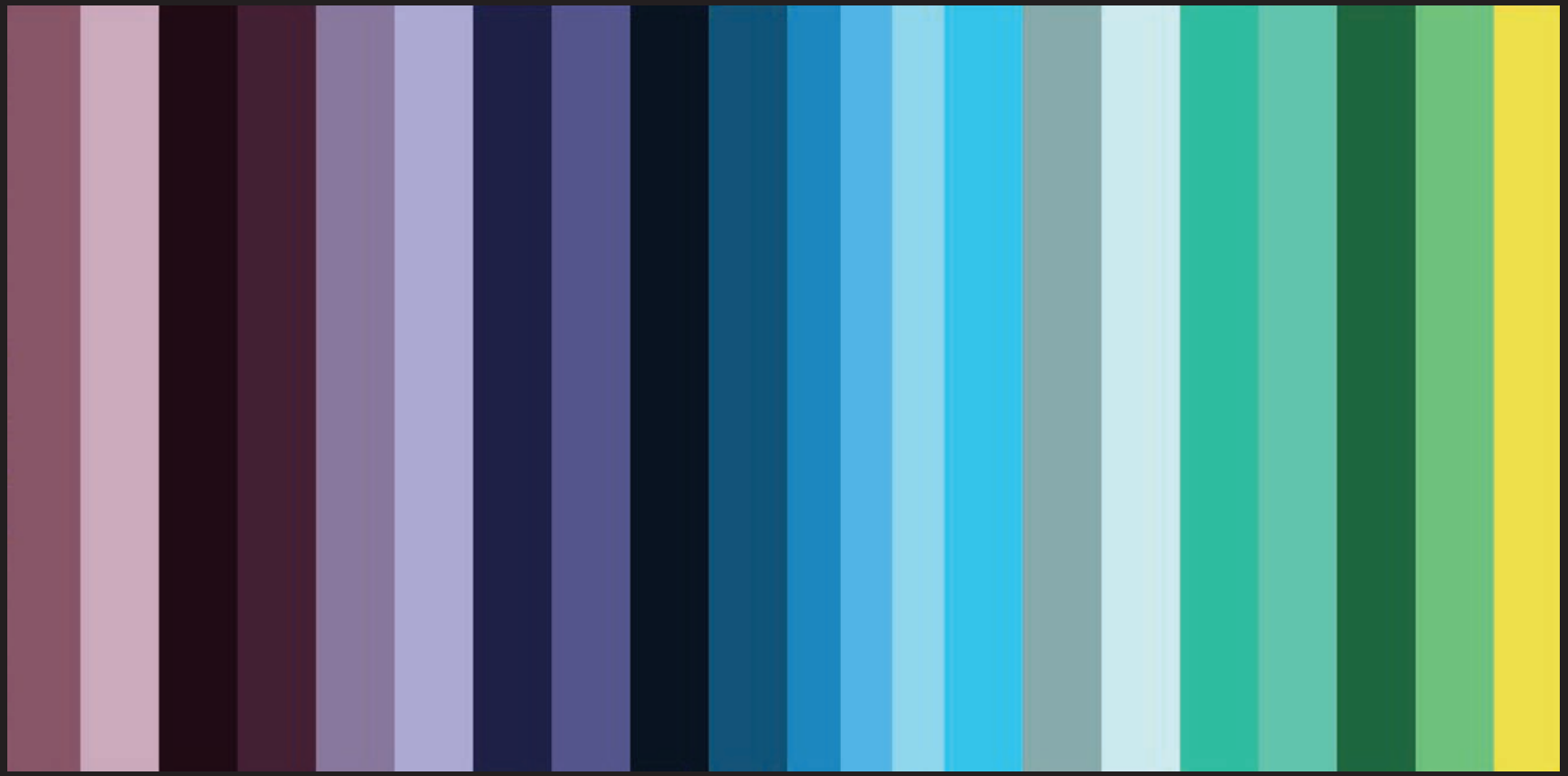
around **art** **bright** celebration **chaos** **cheer** collaboration **colors** **colours** **confusion** **creating** curiosity distinguished **draw** **elements** **energetic** energy enthusiasm **excited** experience **form** freedom fun **game** **happening** interpret irritates **joy** **life** loss **lost** madness mamantaram meaningless **mix** nude people **playful** **positive** revolution scheme **something** squashing strong suppose surprised **together** unsure used zesty

POSITIVE EMOTIONS

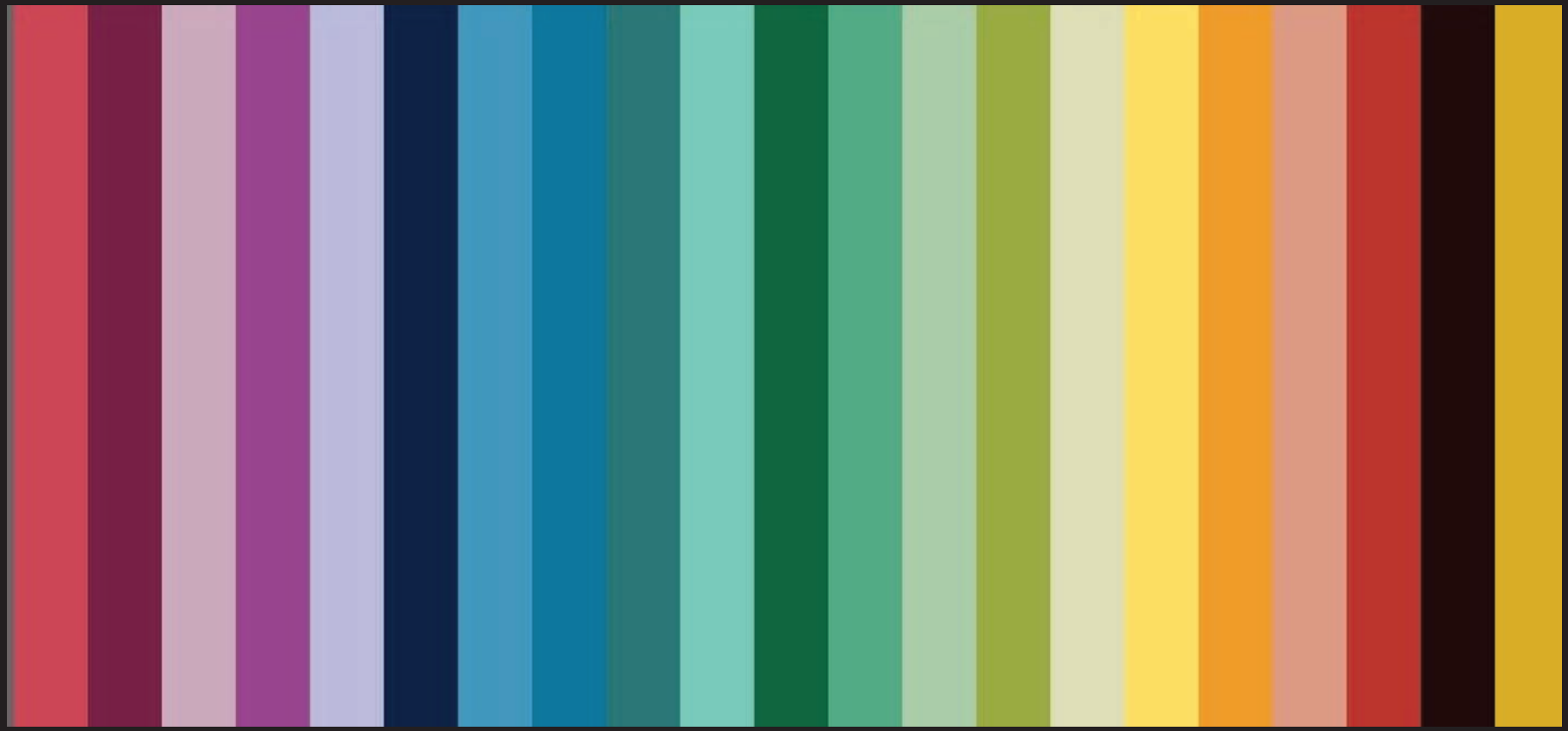
Which elements help generate this emotion? Please elaborate your choice of response.

COLOURS Cool, serene,soothing, light, glow, vibrancy, colourful, harmonious, positive, vivid, festive, prosperous

STROKES soft, organic, smooth, free-flowing, unidirectional,structured, delicate, bending



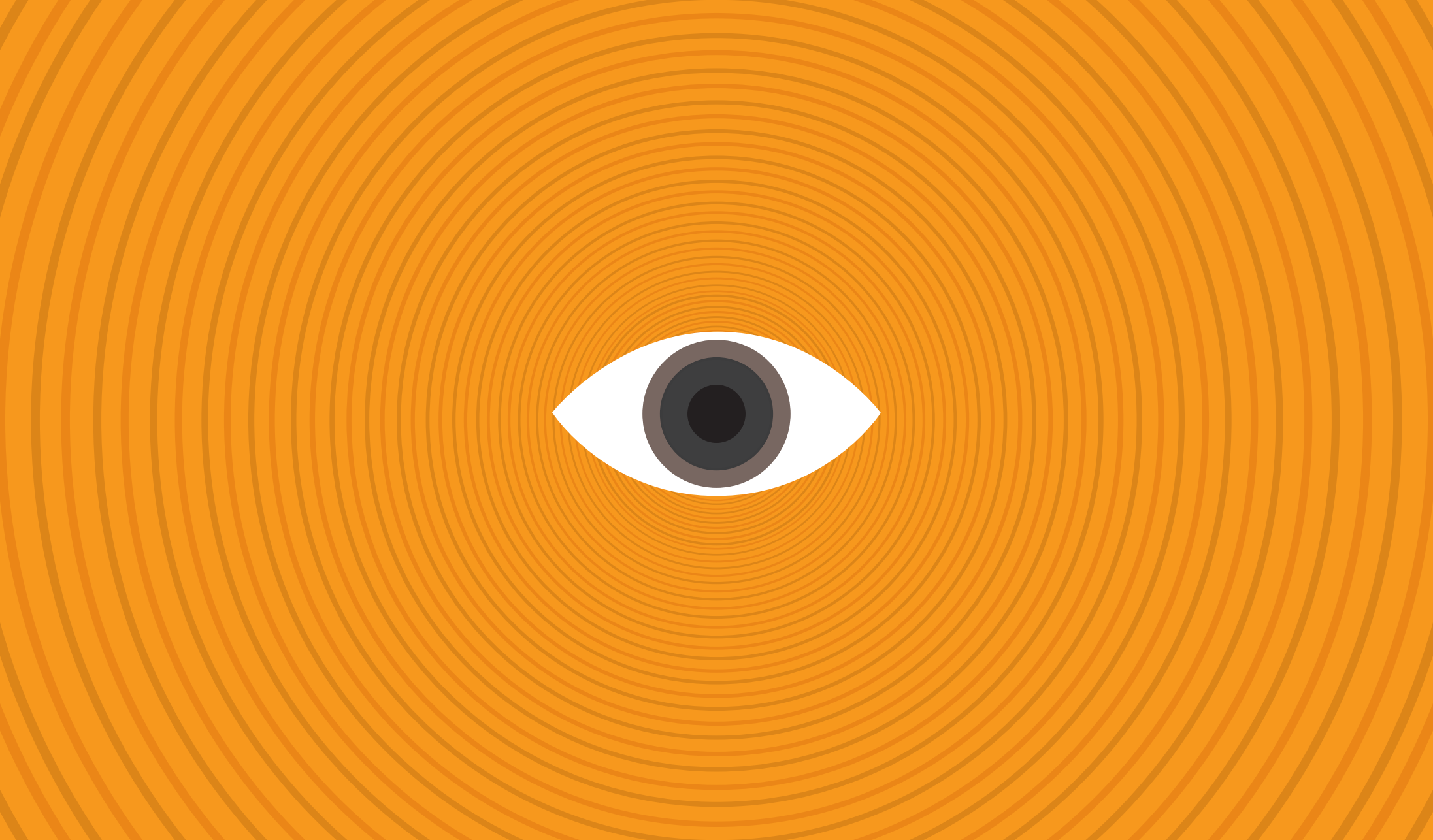
Colour Pallete of 21 colours for
'Shant'



Colour Pallete of 21 colours for
'Hasya'

APPLICATION

LEARNING BY DOING



APPLICATION

VISUAL-ACOUSTIC ** INTERACTION

to enable the user to play with colour and sound in real time

** acoustic space, where both the senses together can be stimulated

Leap Motion is a computer hardware *sensor device* that supports *hand and finger movements* as input without any contact or touch. Leap Motion allows the user to move in *X, Y* and *Z axis* and can detect the entire *hand skeleton.*

DESIGNING A

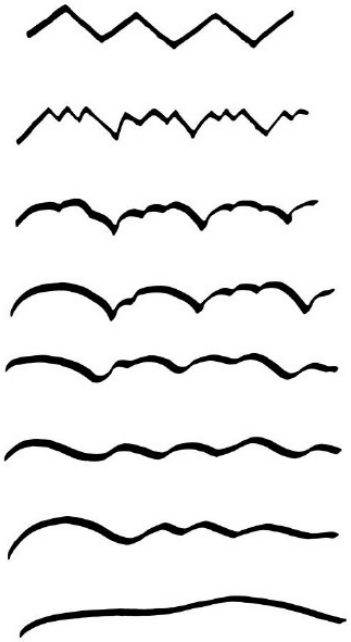
VISUAL-ACOUSTIC INTERACTION

.rang रंग & raga राग

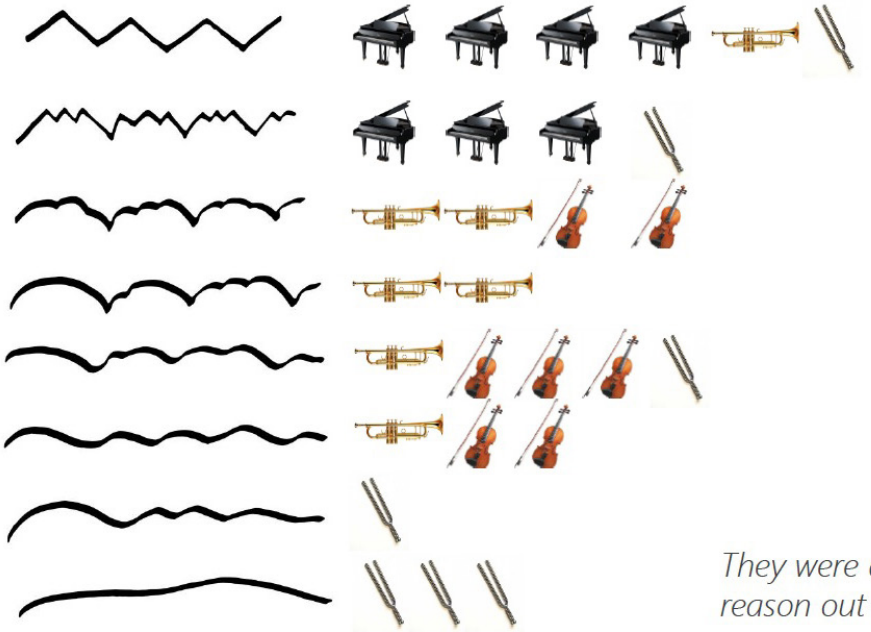
colours (x and y axis)	swaras
lightness (darker, main, lighter)	three saptak (low, mid, upper)
movement in z and y axis	modulation

strokes in x and yaxis	fluidity
size of the brush	pitch
shape of the brush	timbre
opacity	intensity of sound

Visualizing Timbre

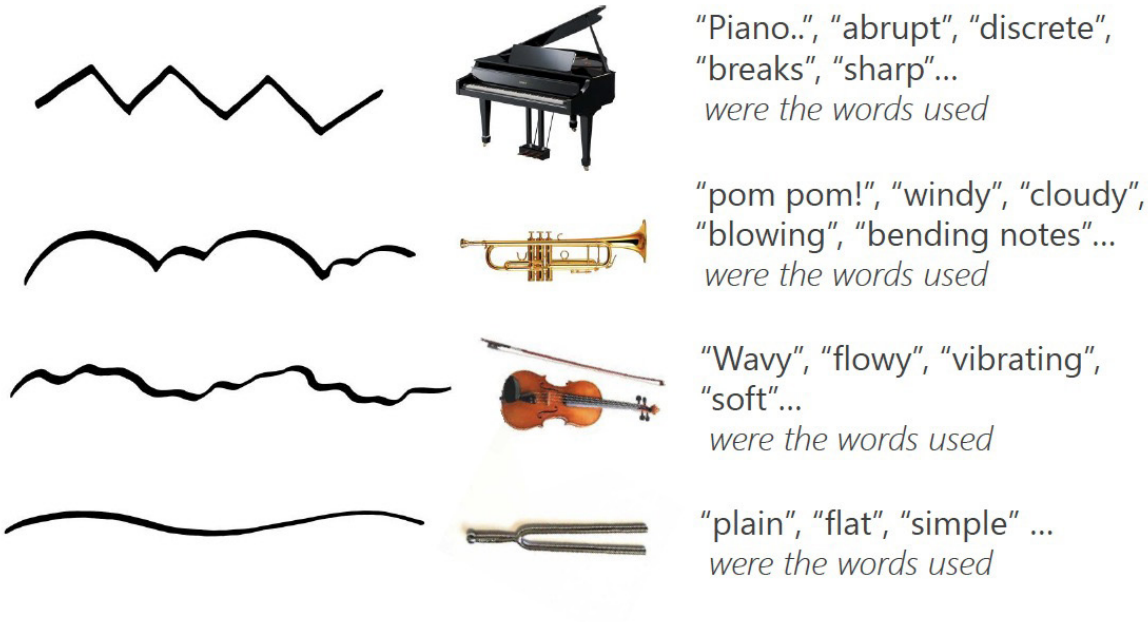


4 completely different instruments were chosen for the visualization check (since designing for children with cochlear implants)



They were also asked to reason out their choices..

Visualizing Timbre

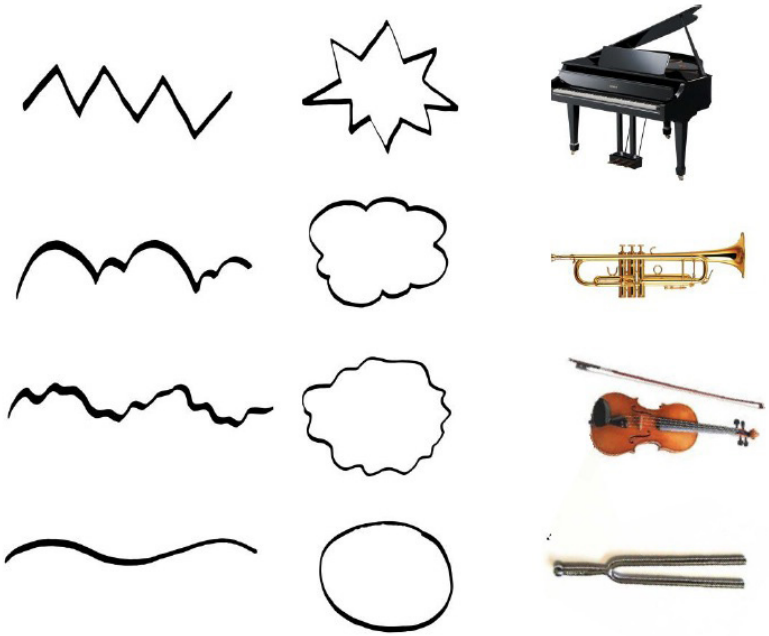


"Piano..", "abrupt", "discrete", "breaks", "sharp"...
were the words used

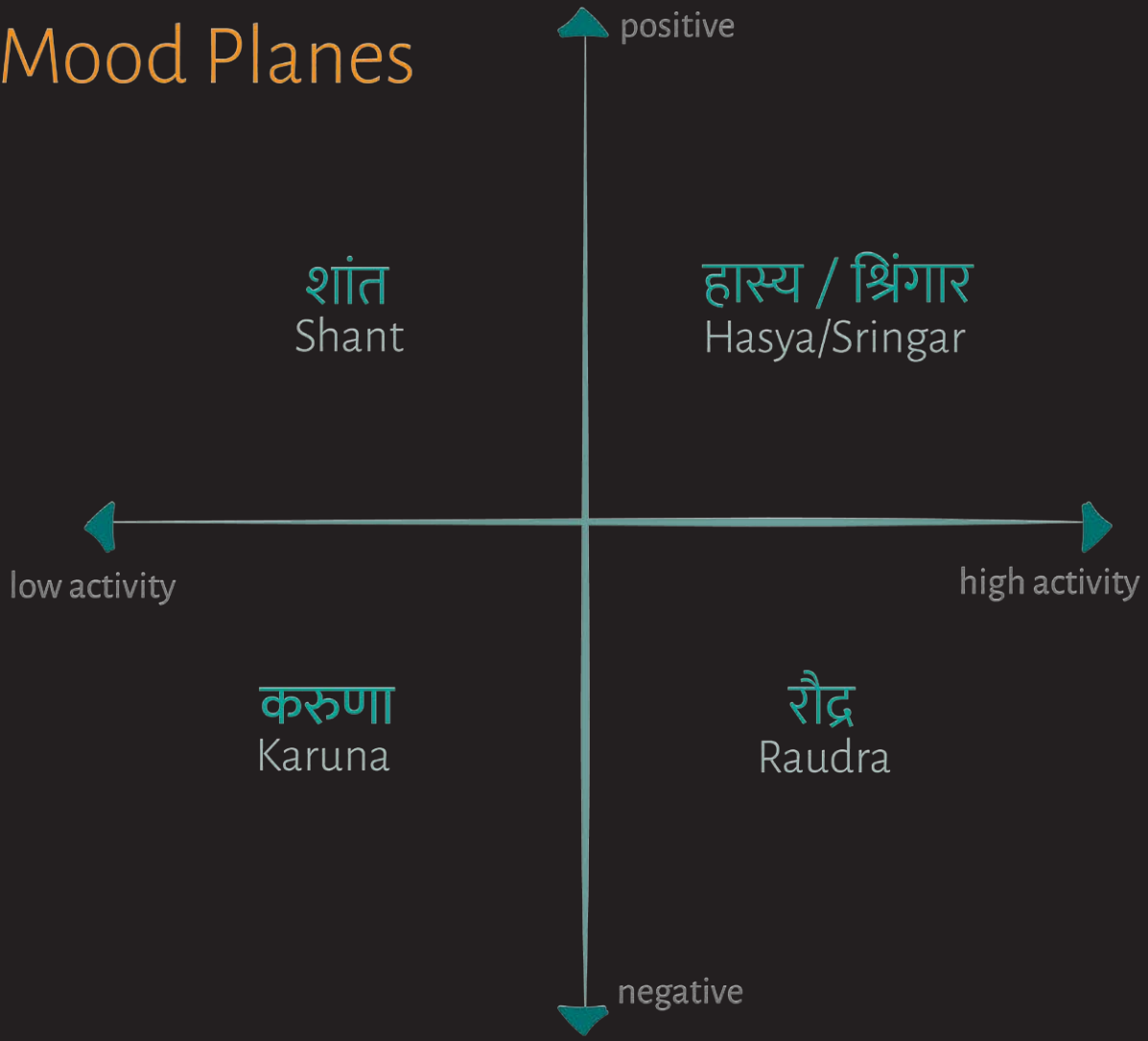
"pom pom!", "windy", "cloudy", "blowing", "bending notes"...
were the words used

"Wavy", "flowy", "vibrating", "soft"...
were the words used

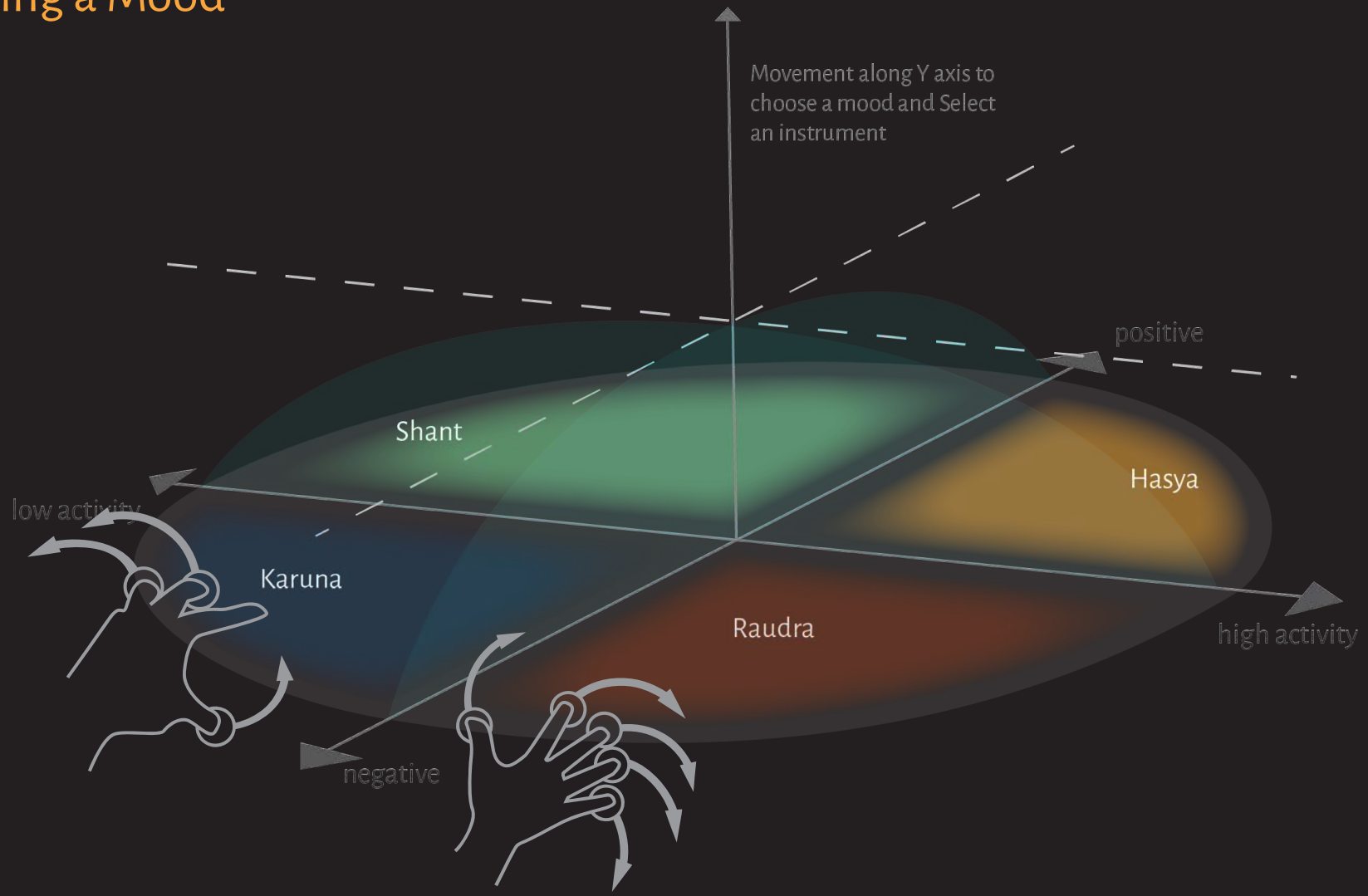
"plain", "flat", "simple" ...
were the words used

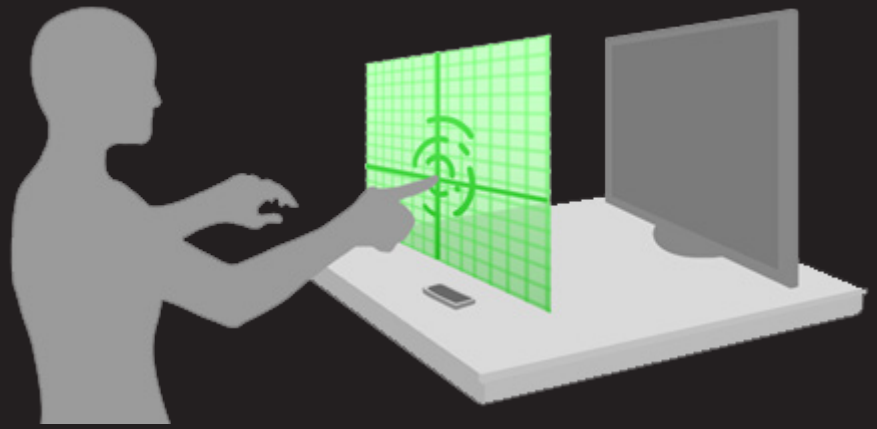


Mood Planes

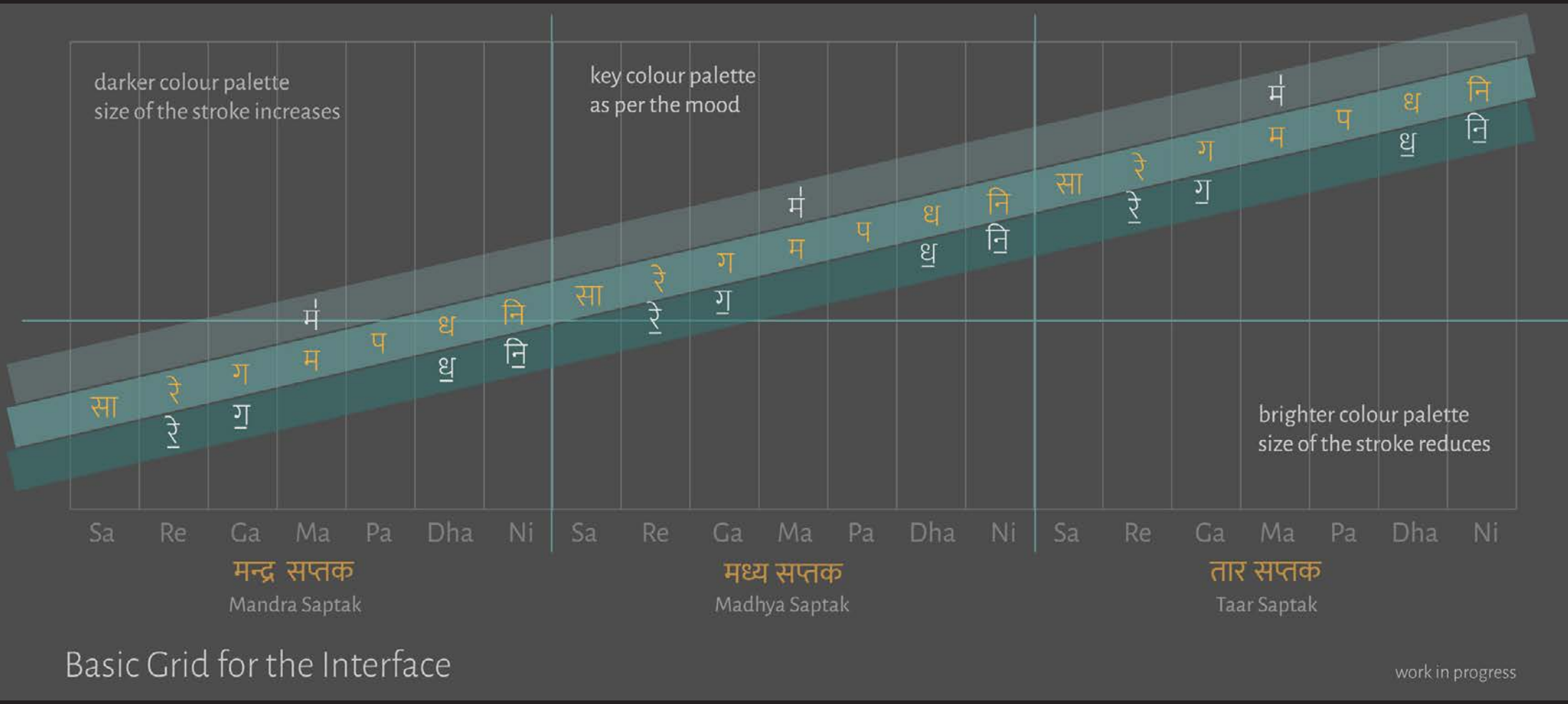

positive
शांत
Shant
हास्य / श्रिंगार
Hasya/Sringar
low activity
high activity
करुणा
Karuna
रौद्र
Raudra
negative

Choosing a Mood





USER INTERFACE GRID



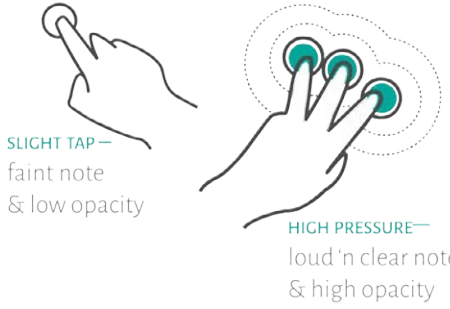
Basic Grid for the Interface

work in progress

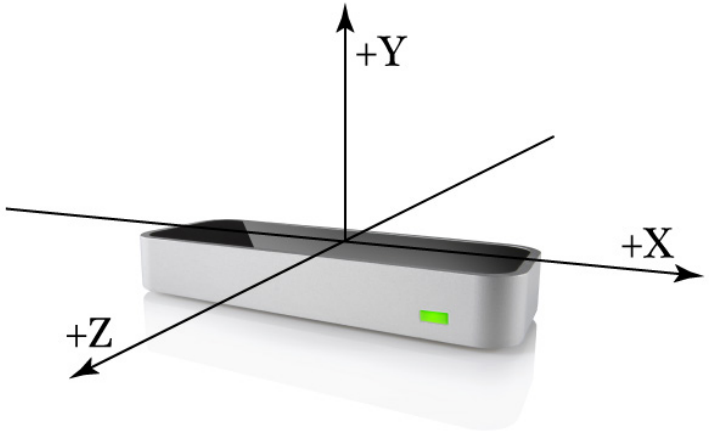
DEFINED GESTURES

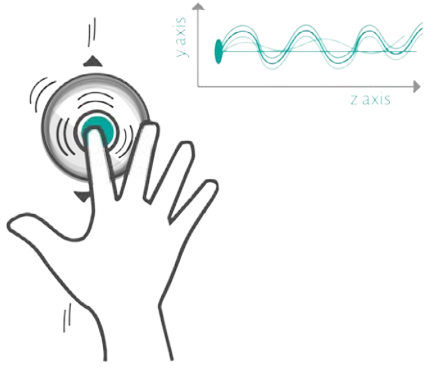
Can be played with both hands

Tap Hold

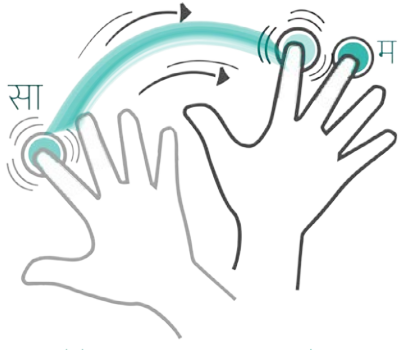


Pressure (movement in z axis) on each note denotes clarity of sound





Hold the note & move it vertically
Causes modulation in the note



Tap 'n Hold a note & move it along a path.
Sound fades out along the path

FUTURE** SCOPE

** Sight of Sound, as a project, is currently at a very nascent stage, where it is trying to define its basic ground. Thus, the stated scope of the project may not be a direct application anytime soon but with due amount of work and in due course of time it could work in these afore mentioned directions.

FUTURE SCOPE **

DEFINING A NEW LANGUAGE

PERFORMANCE AND STORYTELLING

VISUAL MUSIC HEALING

HELPING THE IMPAIRED

** Sight of Sound, as a project, is currently at a very nascent stage, where it is trying to define its basic ground. Thus, the stated scope of the project may not be a direct application anytime soon but with due amount of work and in due course of time it could work in these afore mentioned directions.

CHALLENGES
LEARNINGS