



Benutting van soundscapes in de zorg

SOUNDSCAPES

Francesco Aletta

Why, in general, should we
care about *sound*?

“You can close your eyes, but you cannot close your ears...”

(unknown)

BUT this is actually GOOD...

→ Sounds provide information → Environmental awareness!

(allowing us to know what is going on everywhere around us at all times)

In order to promote healthy and supportive environments, sounds need to be *managed* and *designed*.

→the **SOUNDSCAPE** approach

What is a sound-*scape*?

lightscape/smellscape/thermalscape/cityscape/livingscape...

Land-*scape* (of sounds)

the suffix representing **Middle Dutch -*schap***, from **Old Dutch -*skap***

-scape

1. form, formation, shape
2. scene, picture, view
3. a specific type of space

SOUNDSCAPE is...

...the component of the acoustic environment that can be perceived by humans (Wikipedia).

...an environment of sound, or sonic environment, with emphasis on the way it is perceived and understood by the individual, or by a society (Handbook of Acoustic Ecology).

...acoustic environment as perceived or experienced and/or understood by people, in context (ISO 12913-1).

SOUNDSCAPE

*“[the] acoustic environment as **perceived** or experienced and/or understood by a person or **people**, in **context**”.*

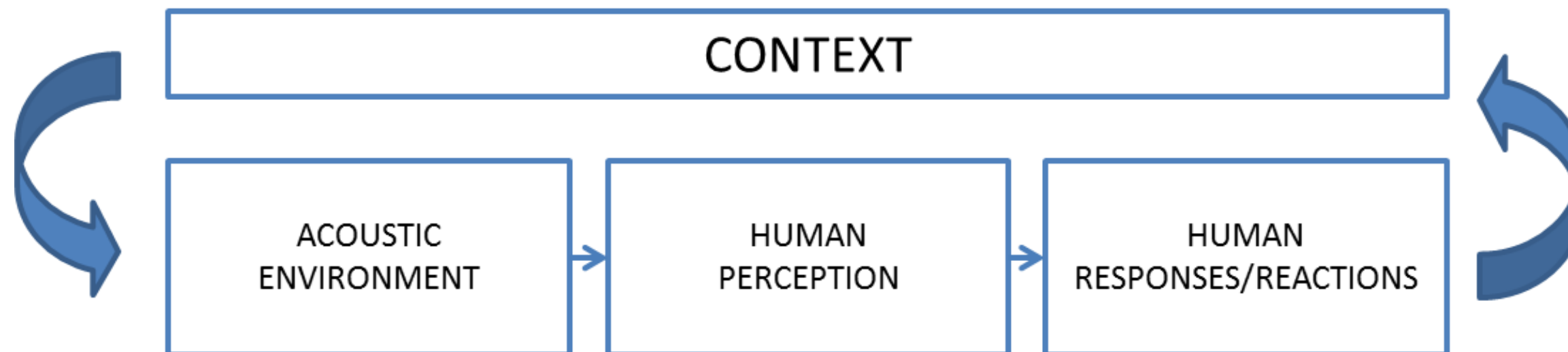
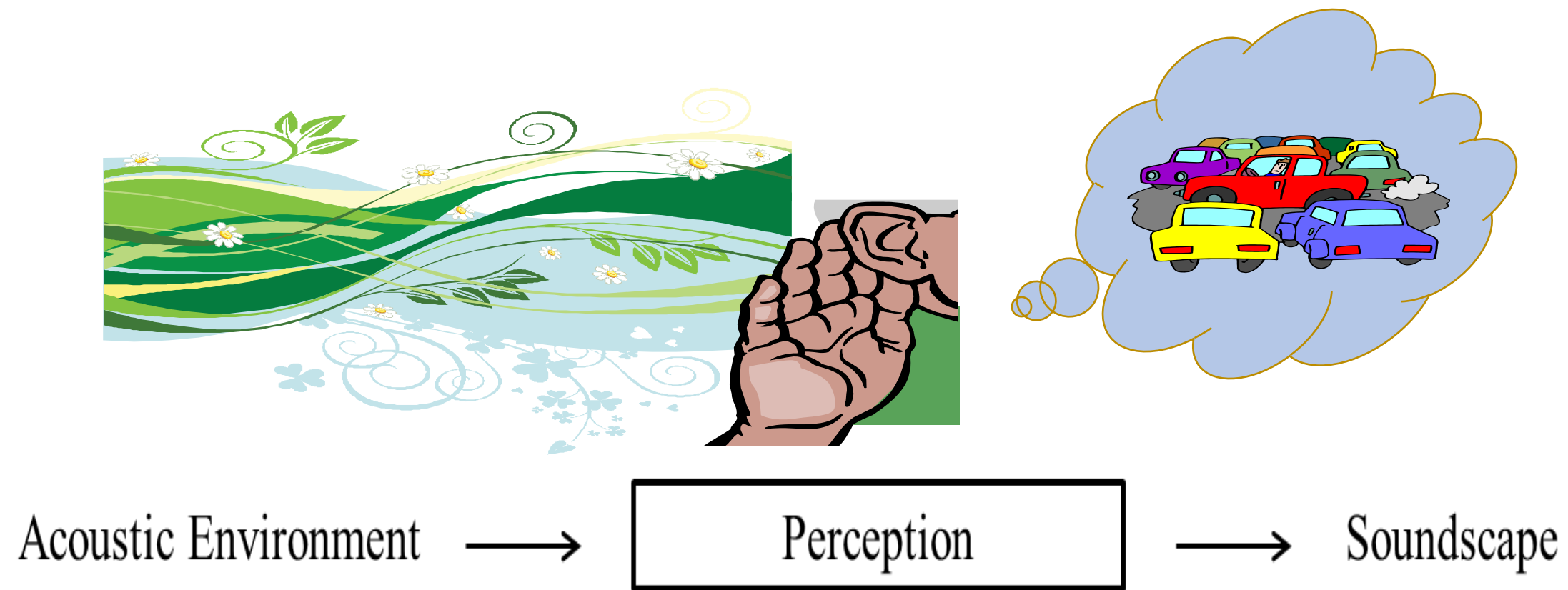
International Organization for Standardization. Acoustics—Soundscape—Part. 1: Definition and Conceptual Framework; ISO 12913-1:2014; ISO: Geneva, Switzerland, 2014

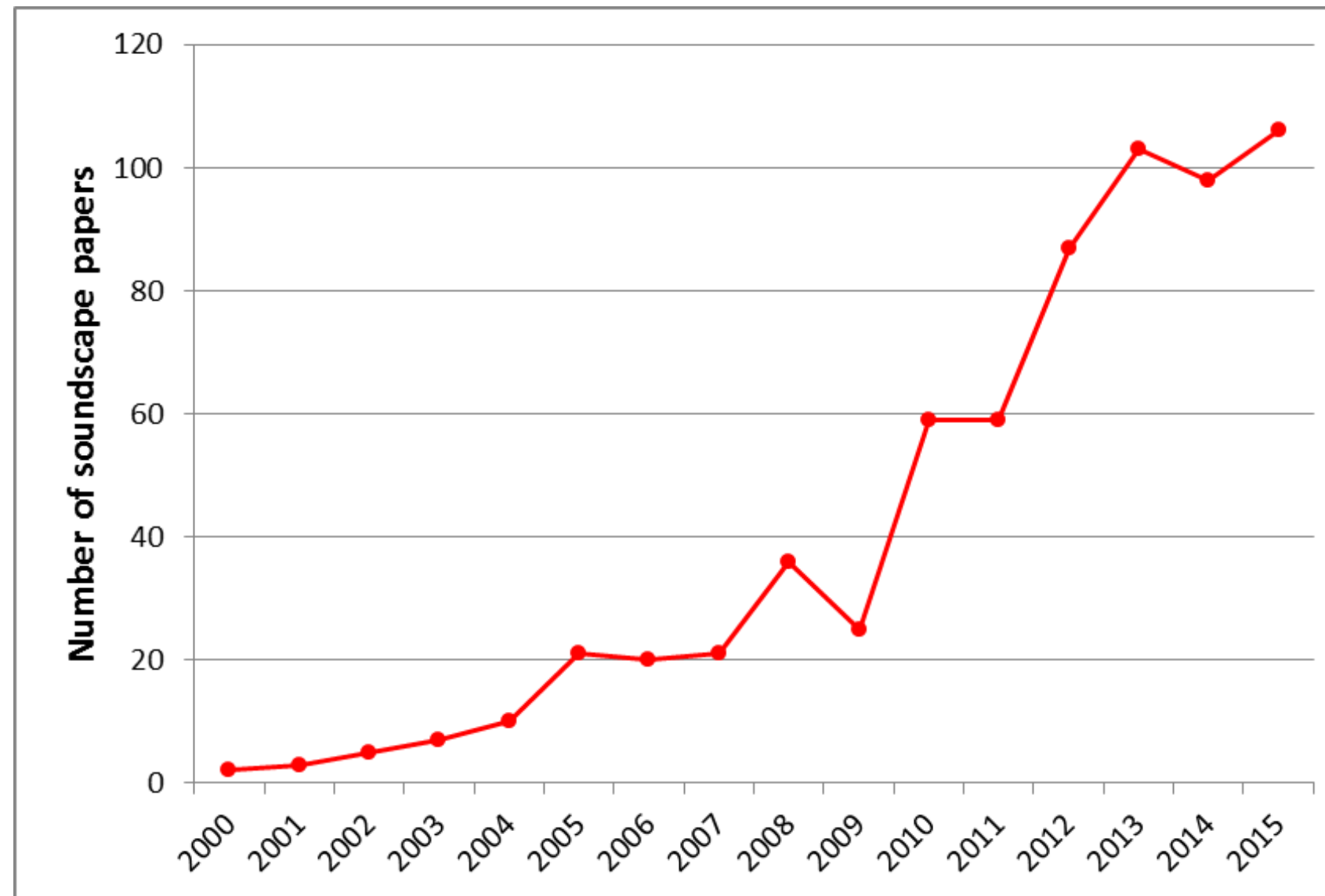
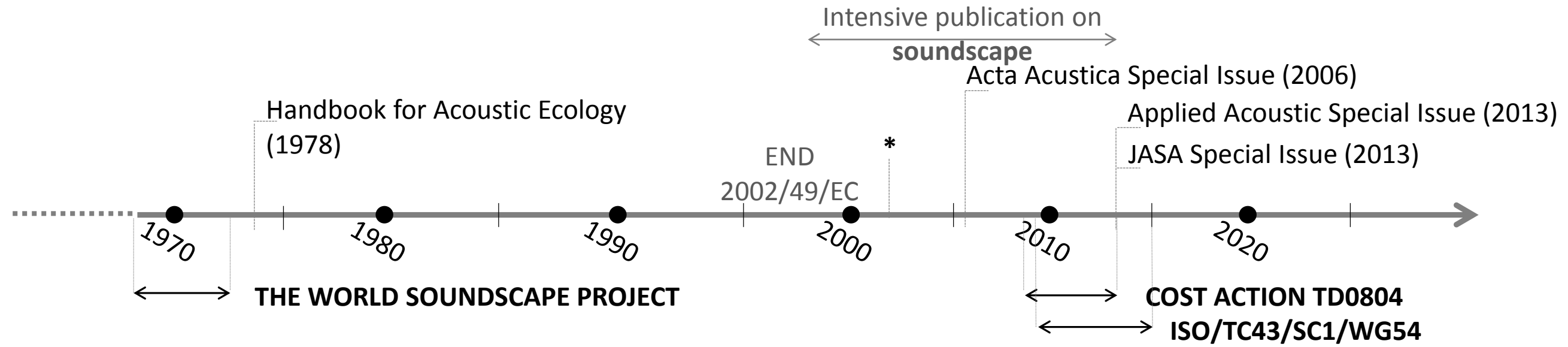
LANDSCAPE

*“an area, as **perceived** by **people**, whose character is the result of the action and **interaction** of natural and/or human factors”*

Council of Europe. European Landscape Convention; European Treaty Series: Florence, Italy, 2000

SOUNDSCAPE ≠ ACOUSTIC ENVIRONMENT





NOISE CONTROL OR SOUNDSCAPE ?

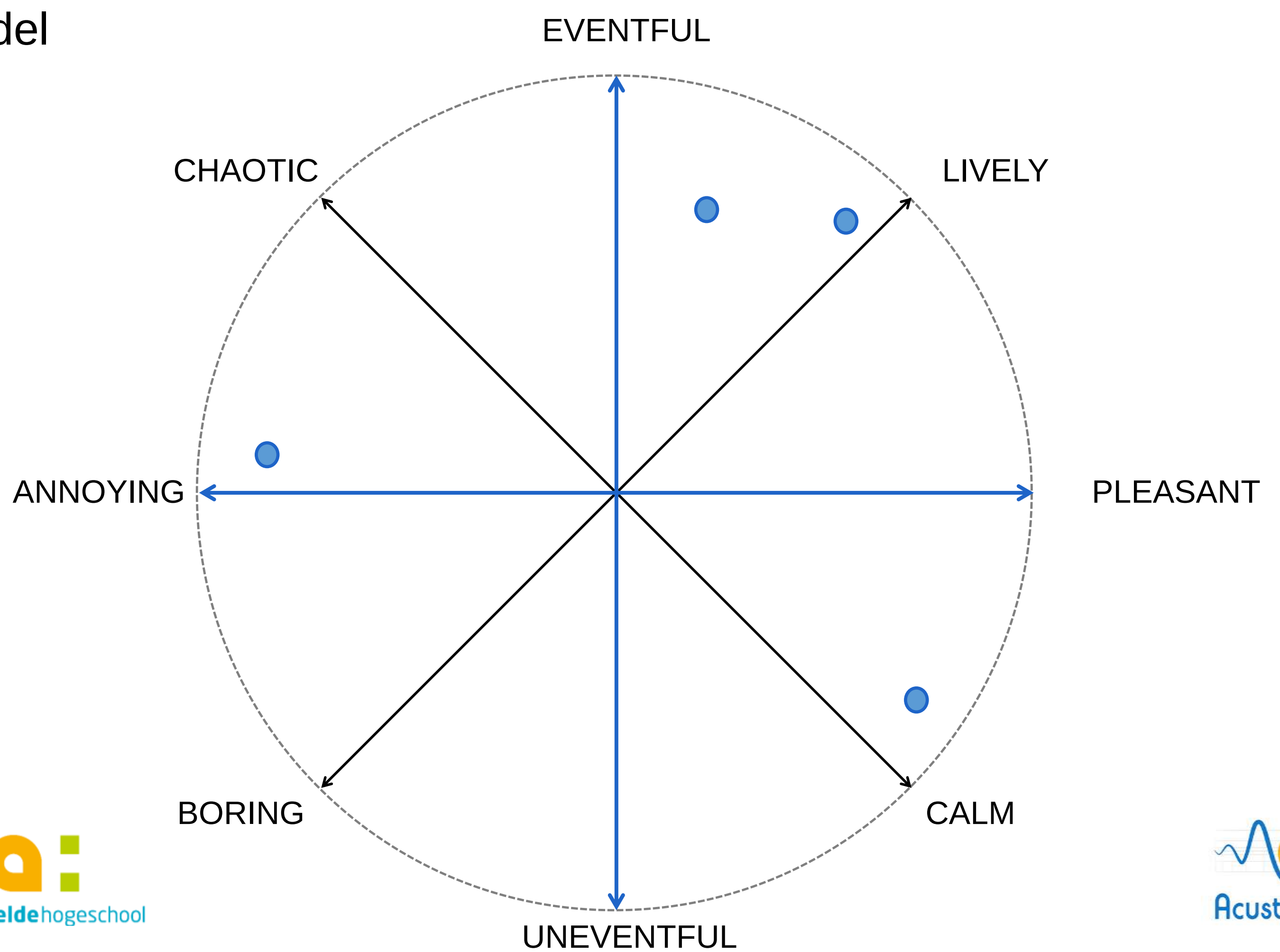
Differences between the Environmental Noise and Soundscape management of the acoustic environments. Adapted from Brown (2012)

Environmental Noise management framework	Soundscape management framework
Sound managed as a <i>waste</i>	Sound perceived as a <i>resource</i>
Focus on sounds of <i>discomfort</i>	Focus on sounds of <i>preference</i>
Human response related to sound levels*	Human response often <i>not</i> only related to sound levels*
Measures by <i>integration</i> across all sound sources	Requires <i>differentiation</i> between sound sources
Manages by <i>reducing</i> sound levels*	Manages <i>masking</i> ** unwanted with wanted sounds as well as reducing unwanted sounds

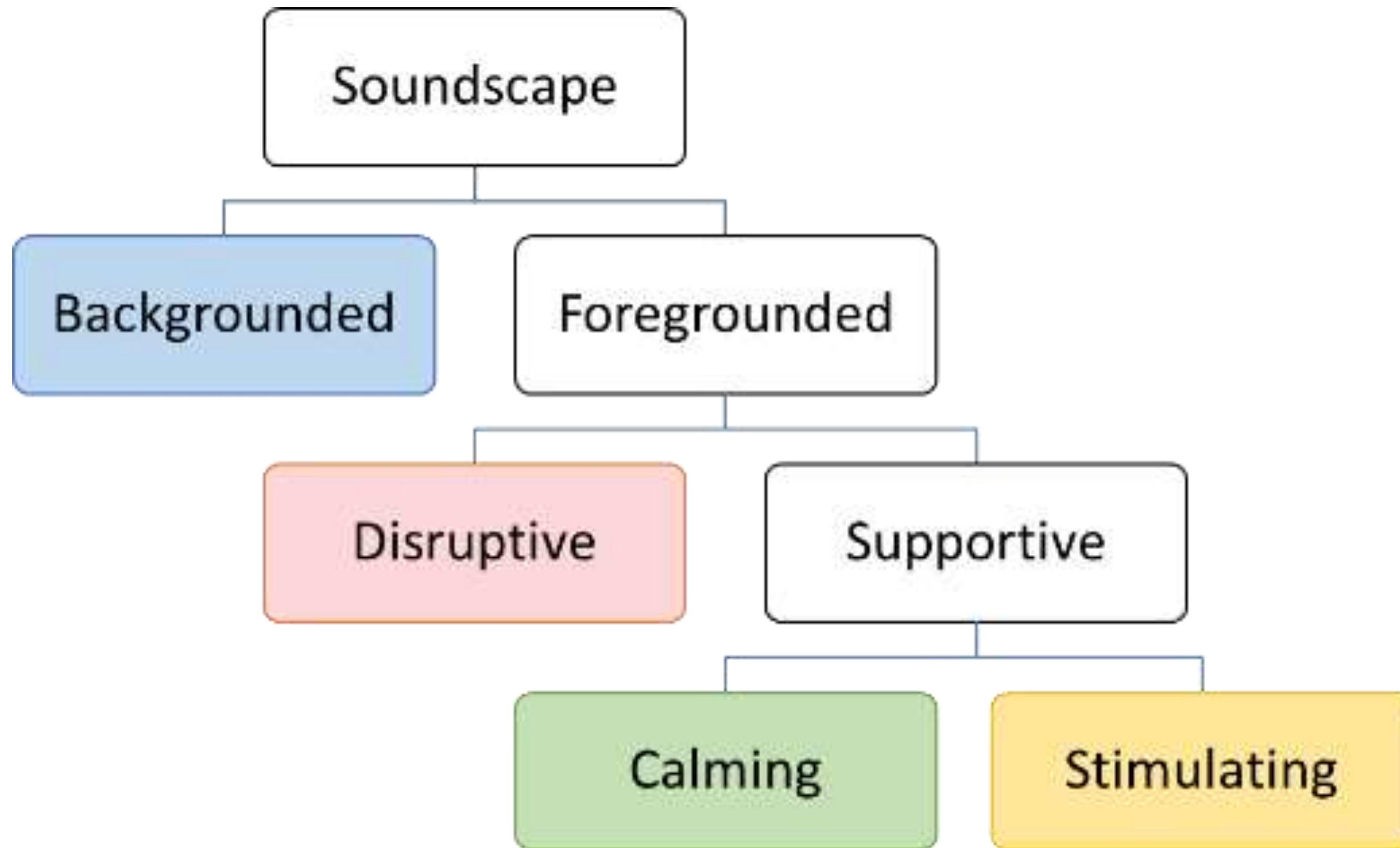
* sound level refers to an equivalent sound pressure level, L_{Aeq} over 10 minutes or more

** masking includes perceptual masking as well as energetic masking

A (possible) model for soundscape characterization

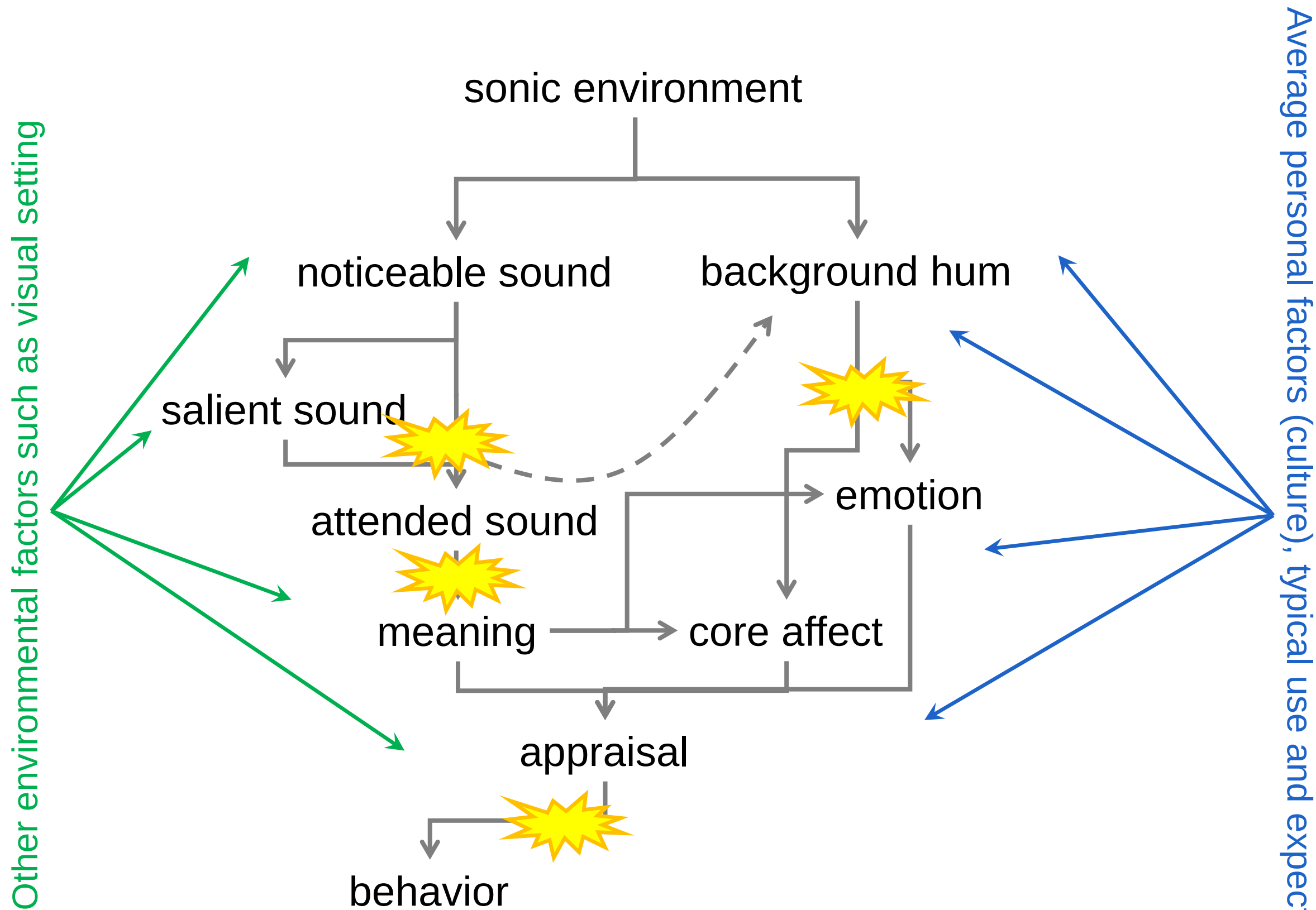


FROM SONIC ENVIRONMENT TO SOUNDSCAPE



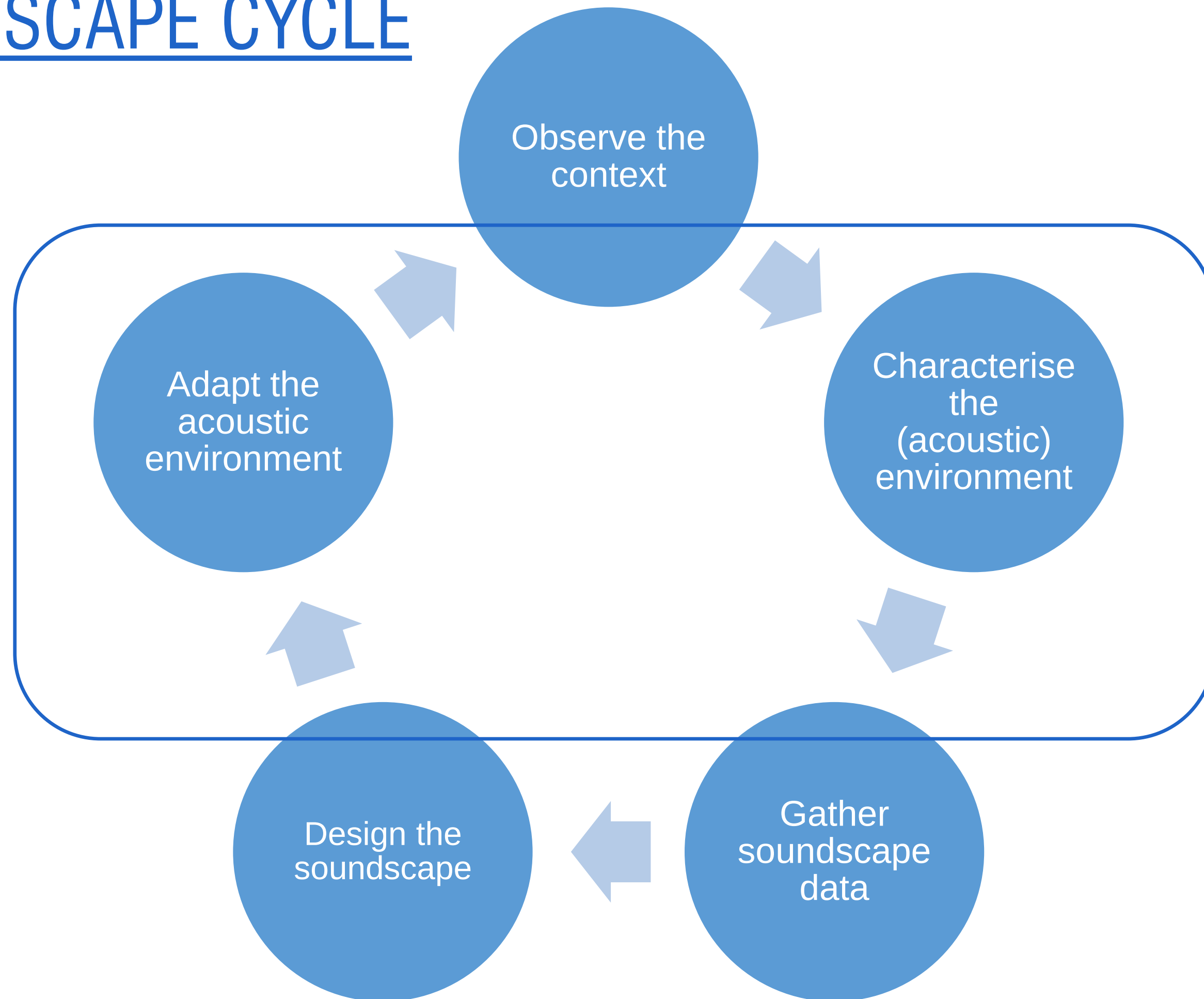
Proposed hierarchical classification of urban soundscapes

FROM SONIC ENVIRONMENT TO SOUNDSCAPE



Hardy, C. J., Marshall, C. R., Golden, H. L., Clark, C. N., Mummery, C. J., Griffiths, T. D., ... & Warren, J. D. (2016). Hearing and dementia. *Journal of neurology*, 263(11), 2339-2354.

THE SOUNDSCAPE CYCLE

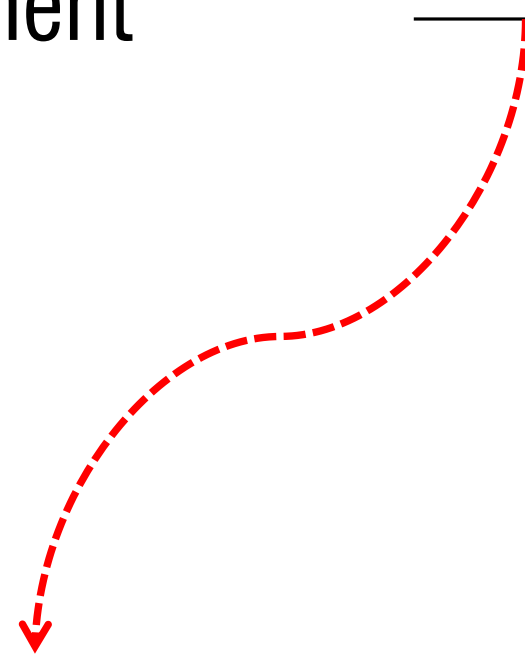


How can we collect
individual responses
on sound perception?

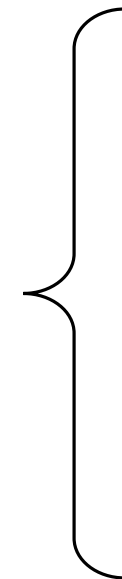
Acoustic Environment



Soundscape



Experience

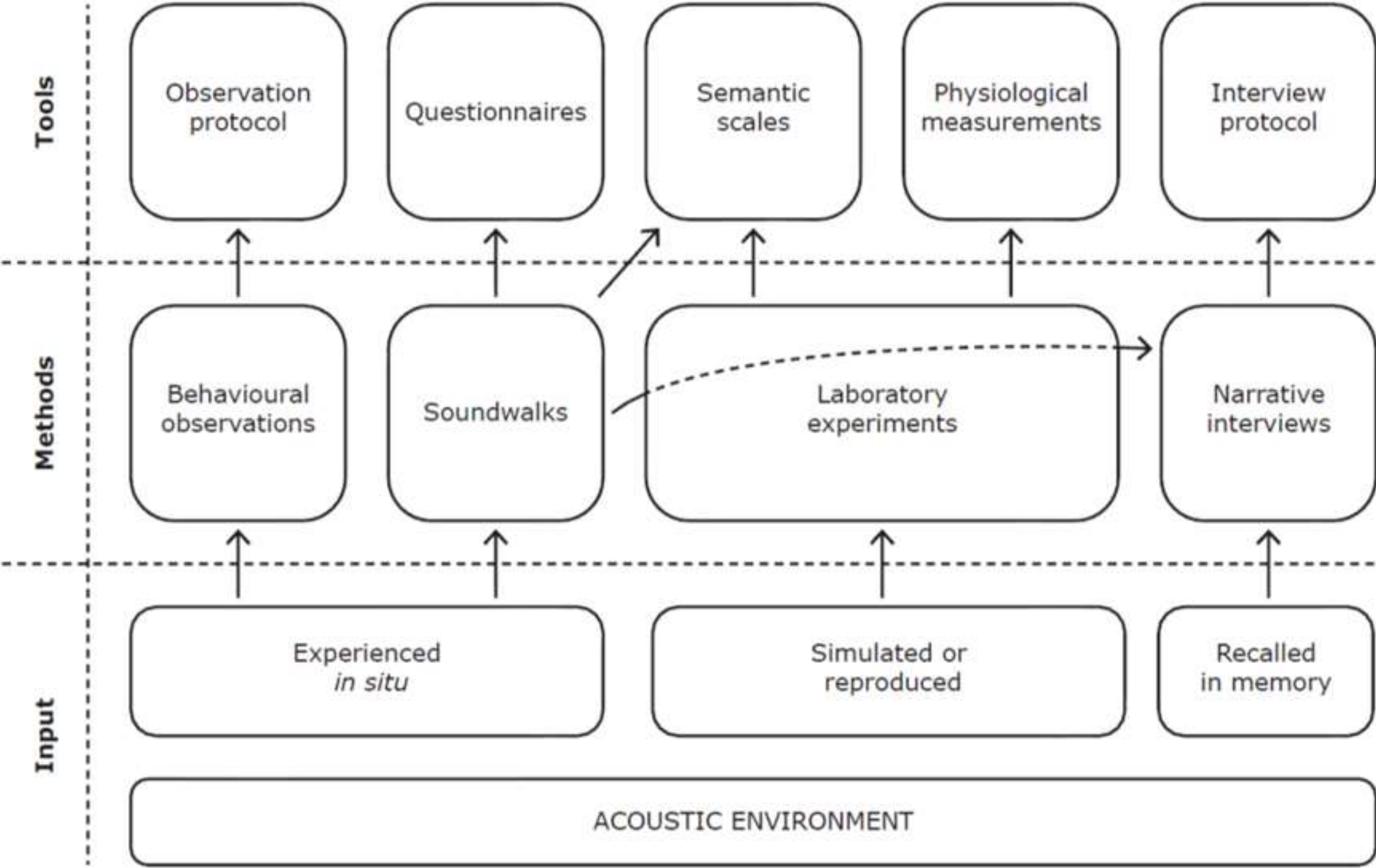


Experienced *in situ*

Simulated/Reproduced

Recalled in memory

Collecting soundscape data: a tentative summary



Acoustic Environment: EXPERIENCED ON SITE

SOUNDWALKS AND QUESTIONNAIRES

- Participants are asked to listen to the acoustic environment
- Participants fill a questionnaire or participate in an interview
- All participants conduct the soundscape assessments in the same location(s)

Overall, how would you describe the present surrounding sound environment?

Very bad |-----| Very good

Overall, to what extent is the present surrounding sound environment appropriate to the present place?

Not at all (0 %) |-----| Perfectly (100 %)

To what extent do you presently hear the following five types of sounds?

	Do not hear at all	-----	Dominates completely
Traffic noise (e.g., cars, buses, trains, air planes)	-----		
Other noise (e.g., sirens, construction, industry, loading of goods)	-----		
Sounds of individuals (e.g., conversation, laughter, children at play)	-----		
Crowds of people (e.g., passers, restaurants, sports event, festival)	-----		
Natural sounds (e.g., singing birds, flowing water, wind in vegetation)	-----		

For each of the 8 scales below, to what extent do you agree or disagree that the present surrounding sound environment is ...

	Strongly disagree	-----	Strongly agree
- pleasant	-----		
- chaotic	-----		
- vibrant	-----		
- uneventful	-----		
- calm	-----		
- annoying	-----		
- eventful	-----		
- monotonous	-----		

ISO/TS 12913-2

Acoustic Environment: EXPERIENCED ON SITE

BEHAVIOURAL OBSERVATIONS

- Can overcome the “experimenter bias”
- Participant may be unaware of the study and might not be able to influence the results
- It is hard to control the experimental conditions, except for one variable at a time, whereas few other variables are under experimental control
- Important need for a clear observation protocol!



Acoustic Environment: RECALLED IN MEMORY

NARRATIVE INTERVIEWS

- Qualitative method: used initially when the researcher has limited knowledge of context
- Useful for exploring and identifying relevant aspects of soundscape
- May provide in-depth information about the human experience

Interviews can also be combined with ‘acoustic diaries’ that are personal records and notes taken by the participants throughout a given period of time, related to the experience the acoustic environment

- Limitation: interviews are prone to the researcher’s interpretations.
- Depending on the interviewer’s style and on how detailed the questions are, interview results can be highly individual



WHAT WE DID IN THE NURSING HOMES

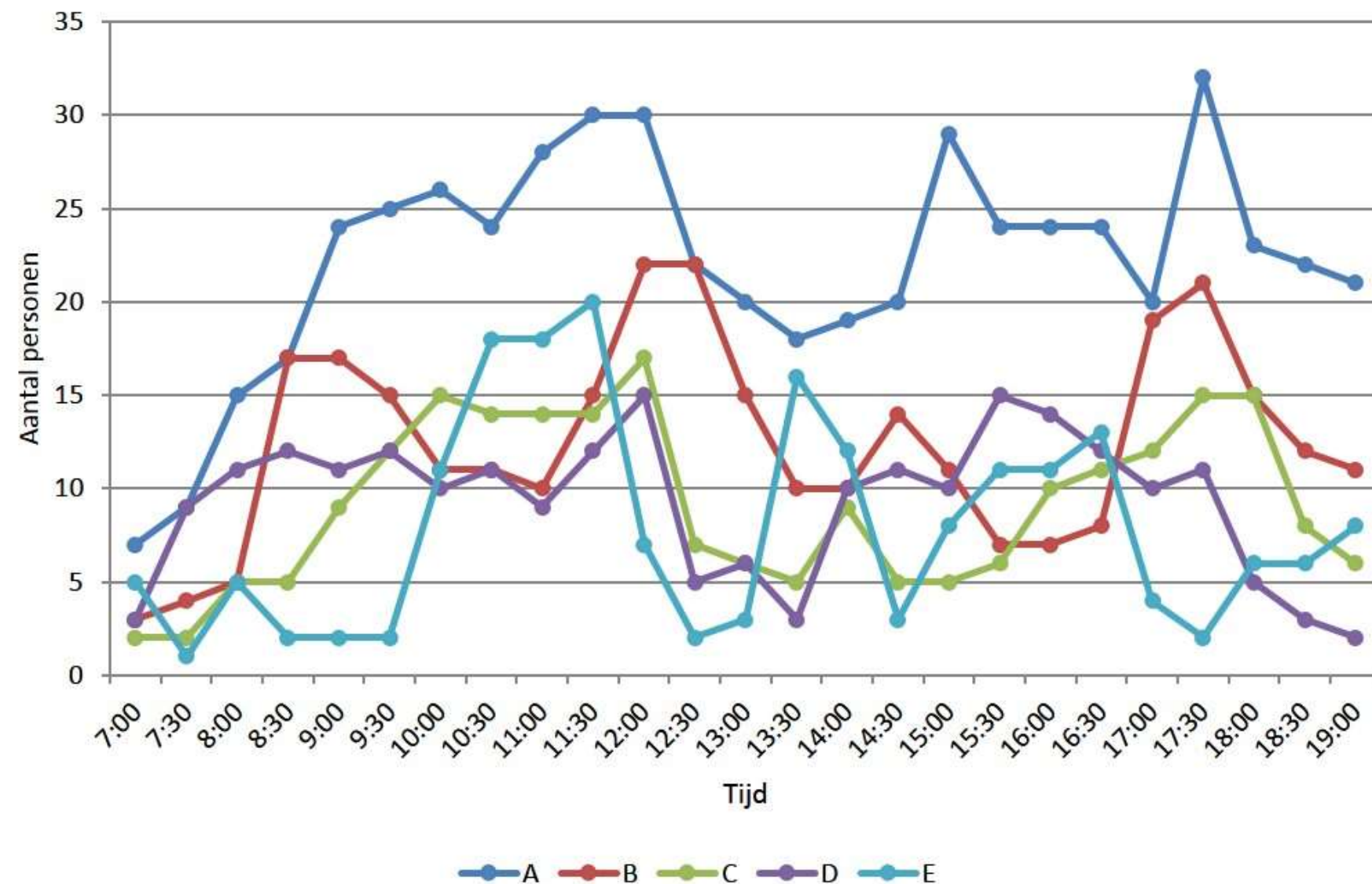
Soundscape observation with standard protocol

- One researcher on site in the living rooms of the NHs
- Assessment covering 12-hour slot (07-19) – every 30min
 - Overall soundscape quality (ISO/TS 12913-2)
 - Soundscape attributes (ISO/TS 12913-2)
 - Sound sources dominance (ISO/TS 12913-2)
 - Counting number of people

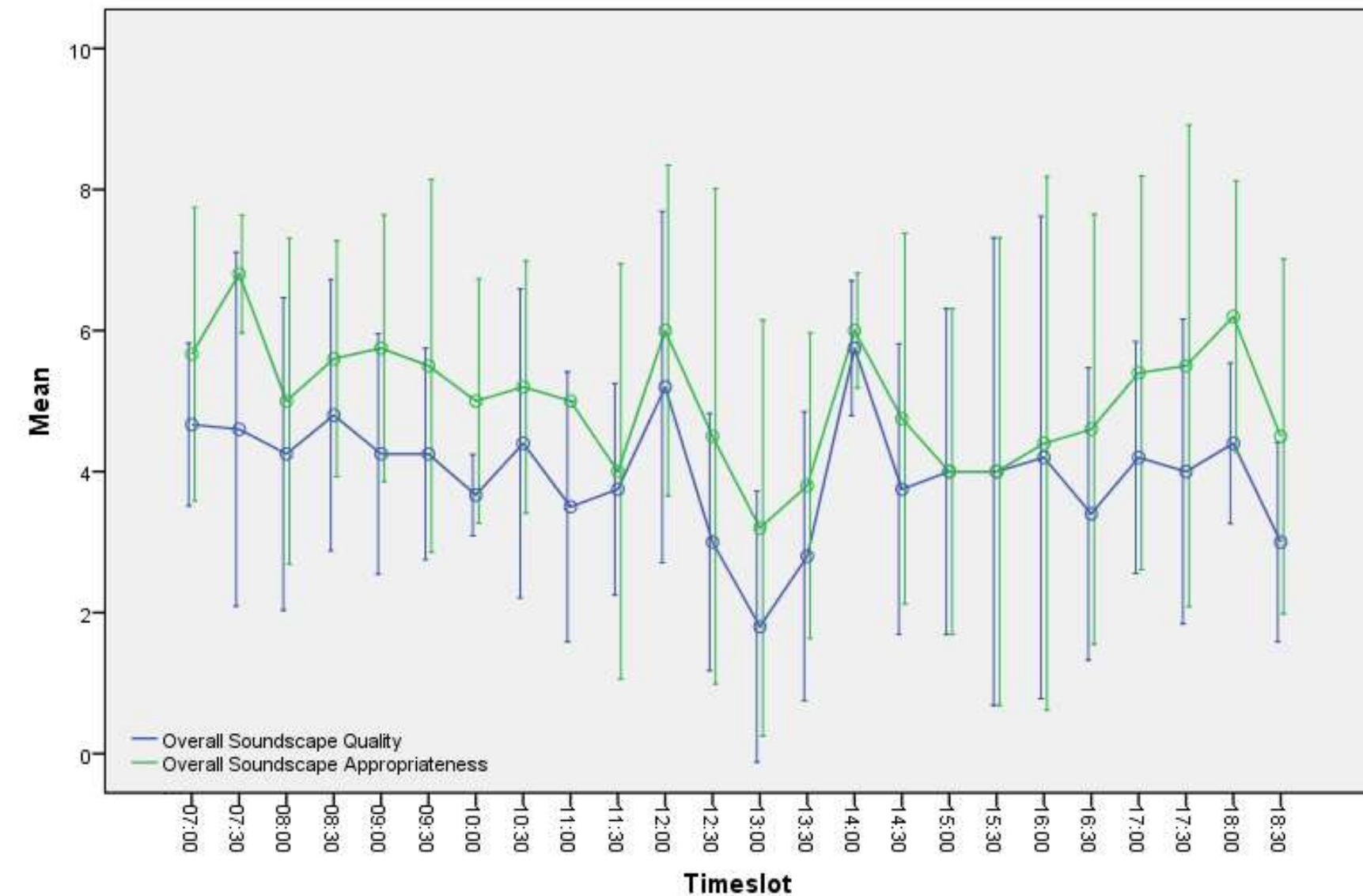
WHAT WE DID IN THE NURSING HOMES

ASSESSING TEMPORAL VARIATION

Counting people



Overall soundscape quality

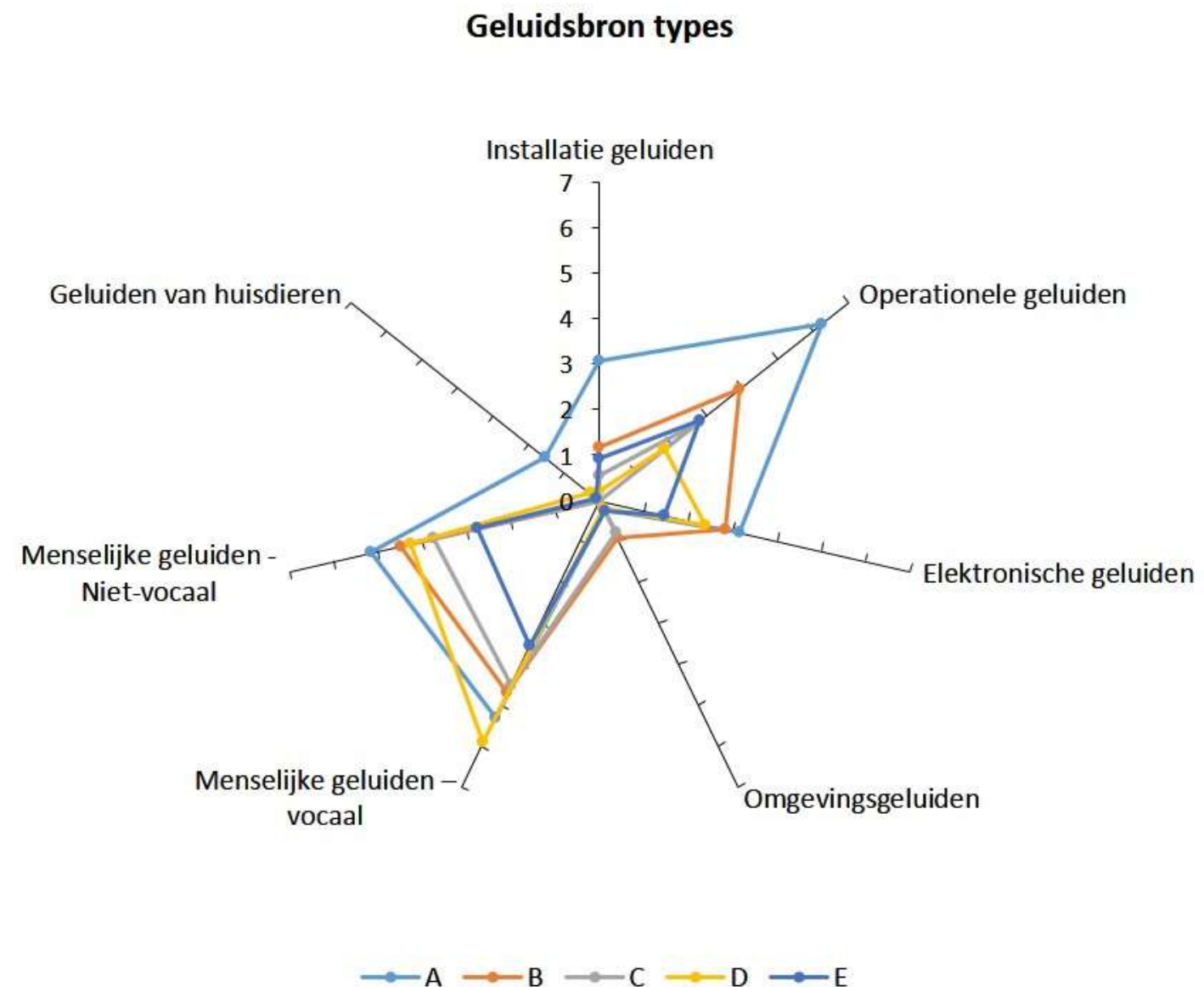


Error bars: +/- 1 SD

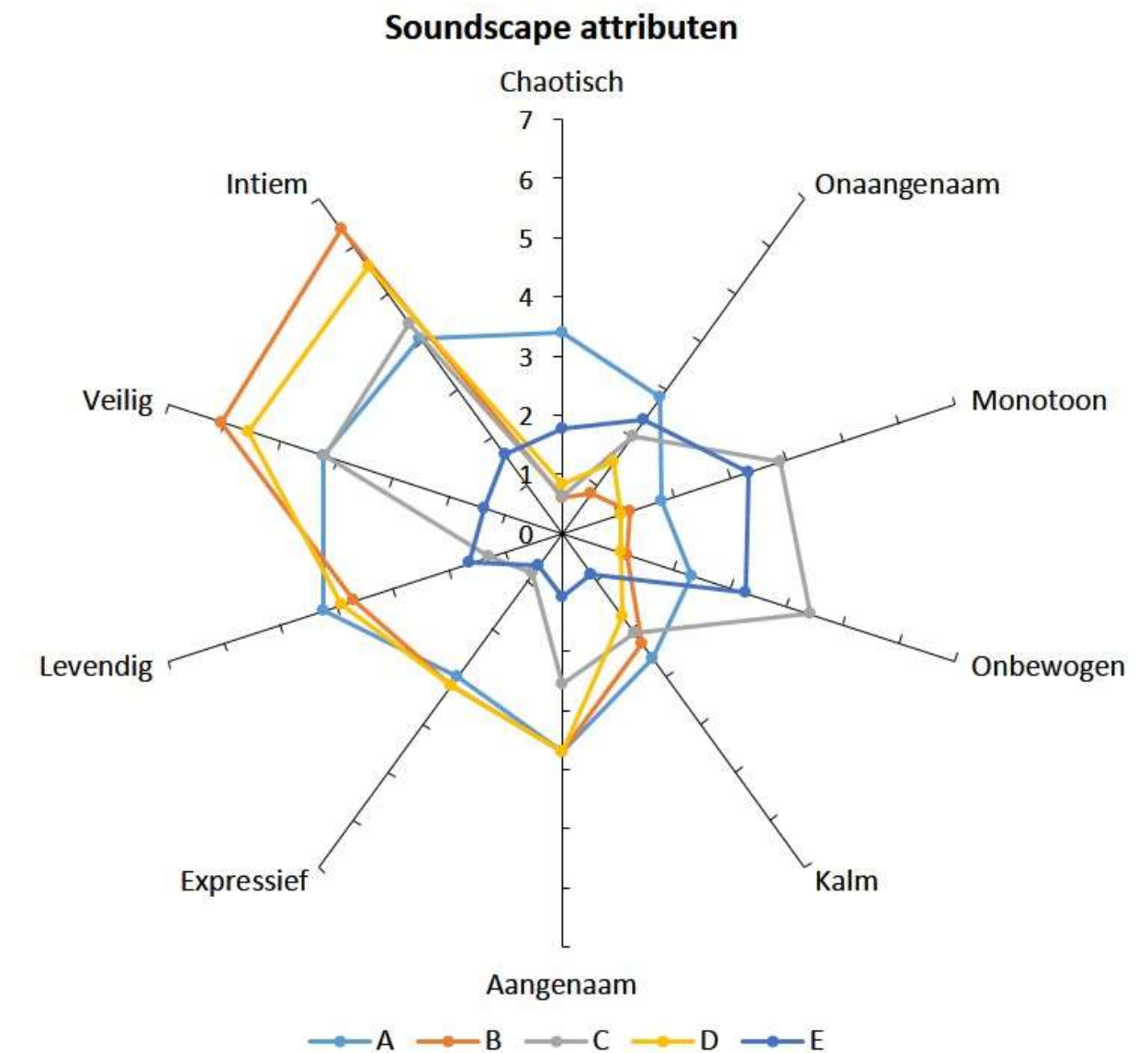
WHAT WE DID IN THE NURSING HOMES

AGGREGATING GENERAL PROFILES

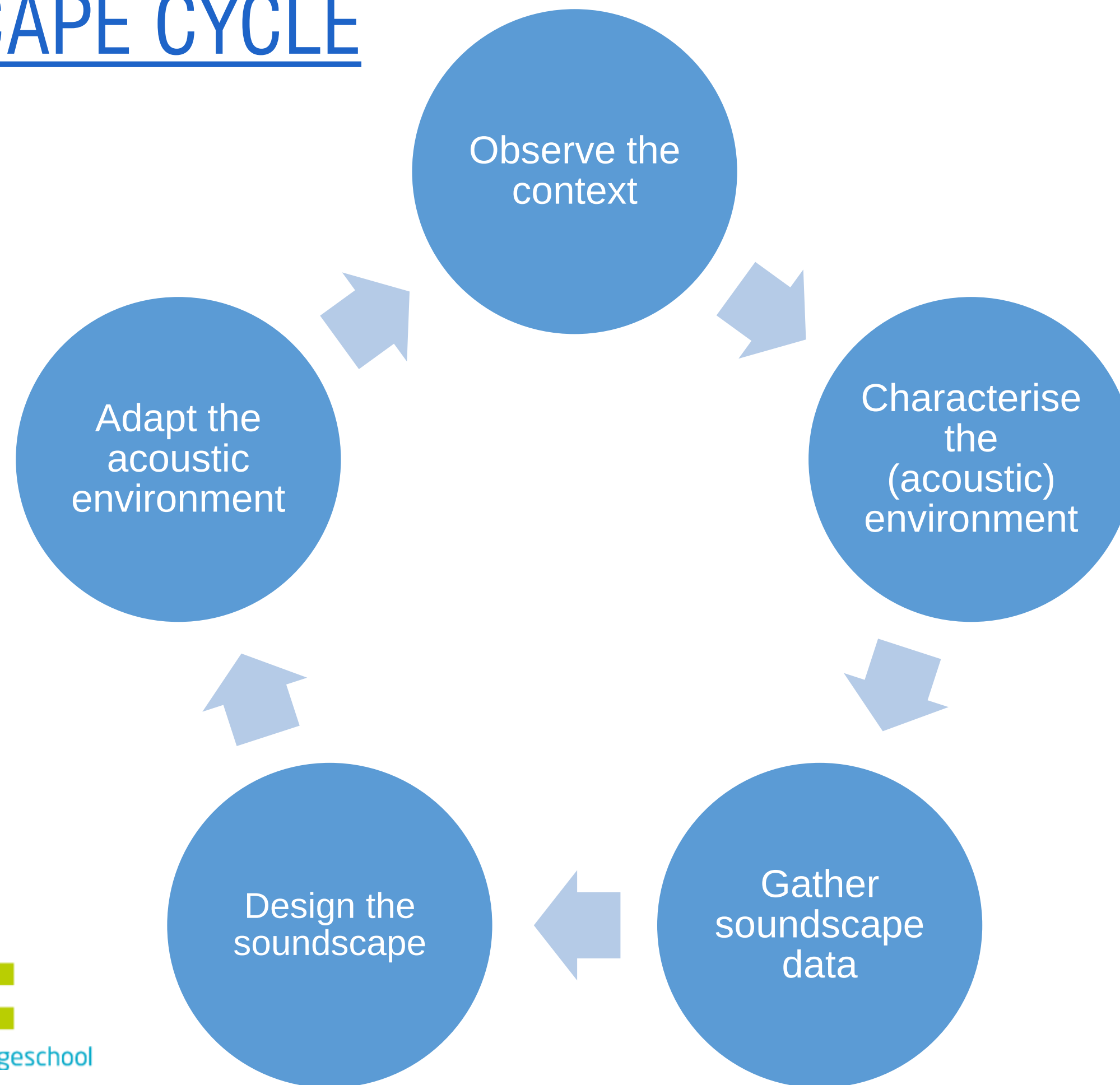
Sound sources dominance



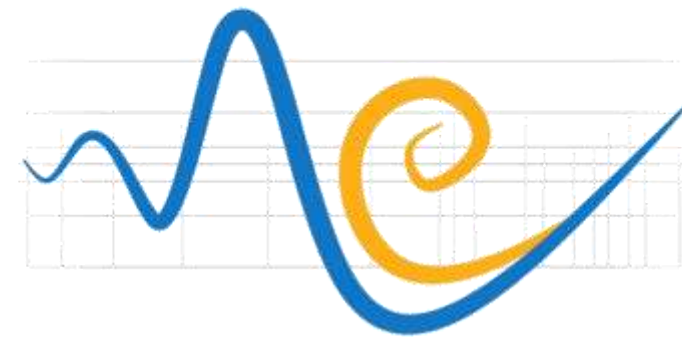
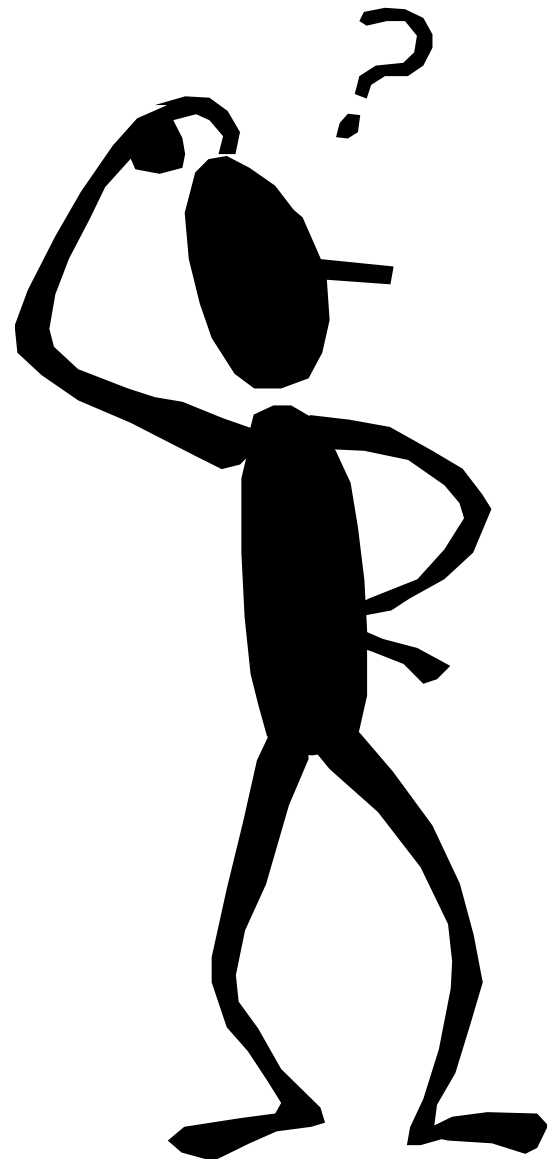
Soundscape attributes



THE SOUNDSCAPE CYCLE



MEER INFO...



AcustiCare

www.acusticare.be/soundscapes-en-hun-benutting

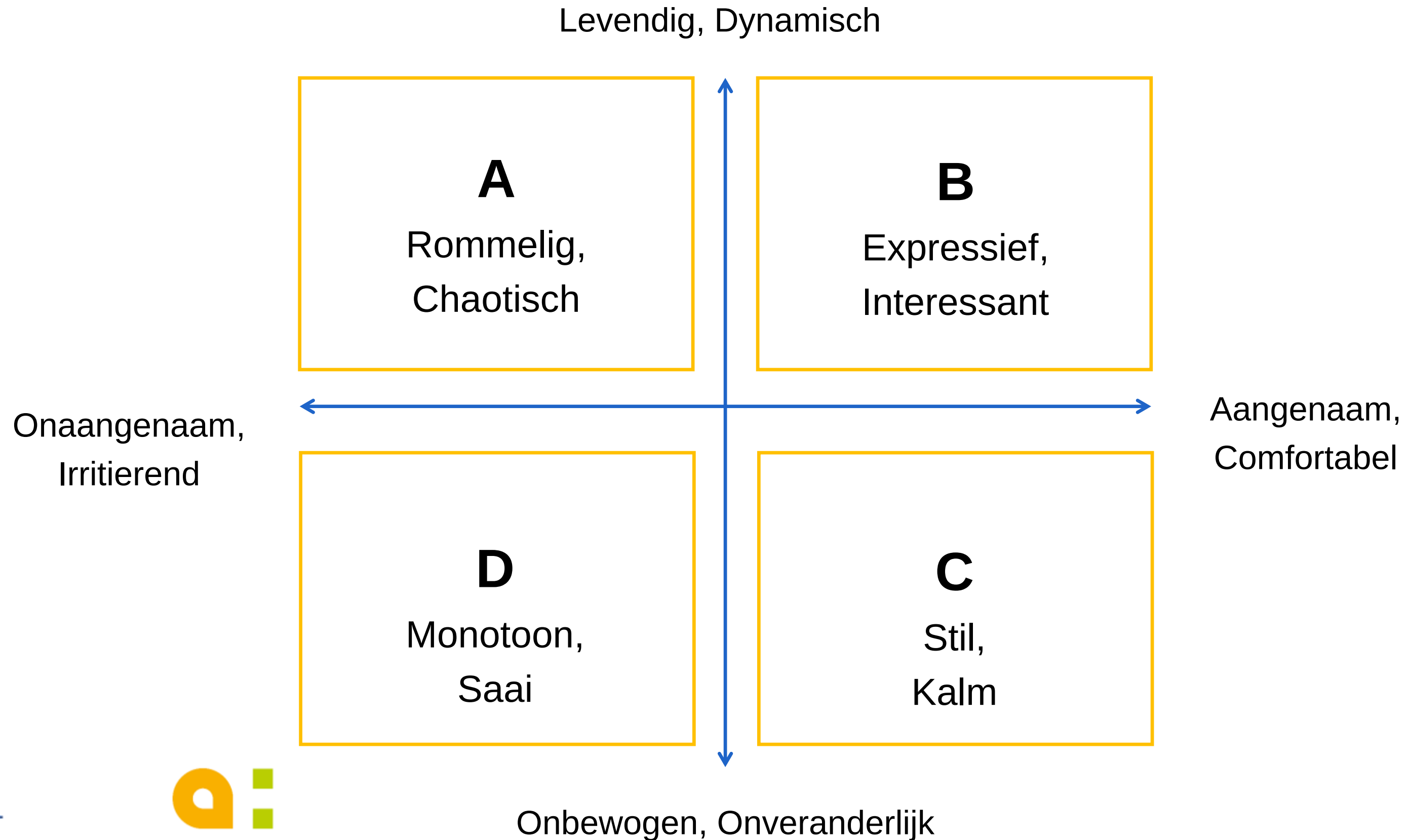
LISTENING EXPERIMENT

Tara Vander Mynsbrugge, Paul Devos, Pieter Thomas, Francesco Aletta

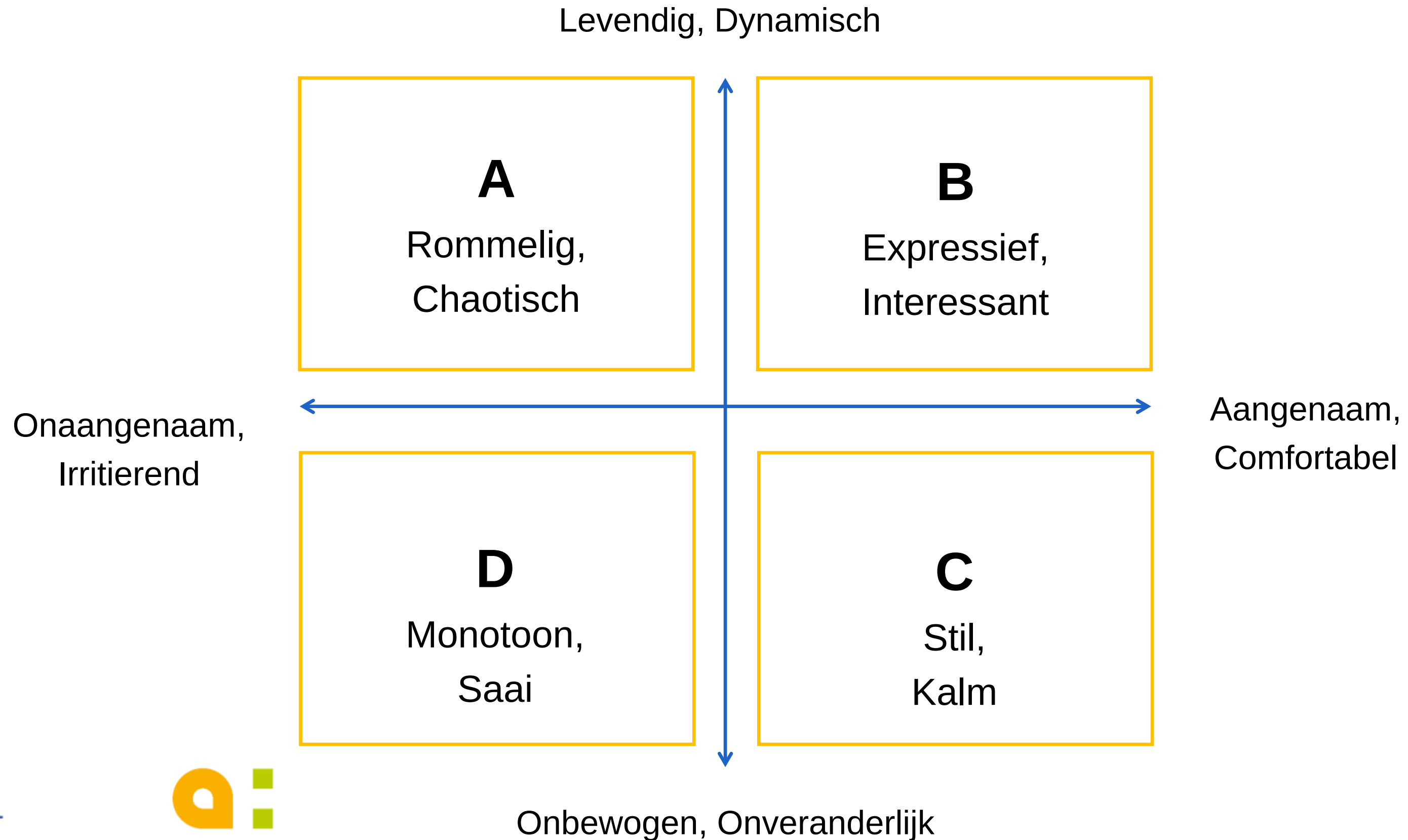
LISTENING SESSION:

- 9 audio samples: 30 seconds of listening
- Listen carefully
- 10 seconds to “assess” the soundscape
- A: chaotic [Rommelig, Chaotisch]
- B: vibrant [Expressief, Interessant]
- C: calm [Stil, Kalm]
- D: monotonous [Monotoon, Saai]

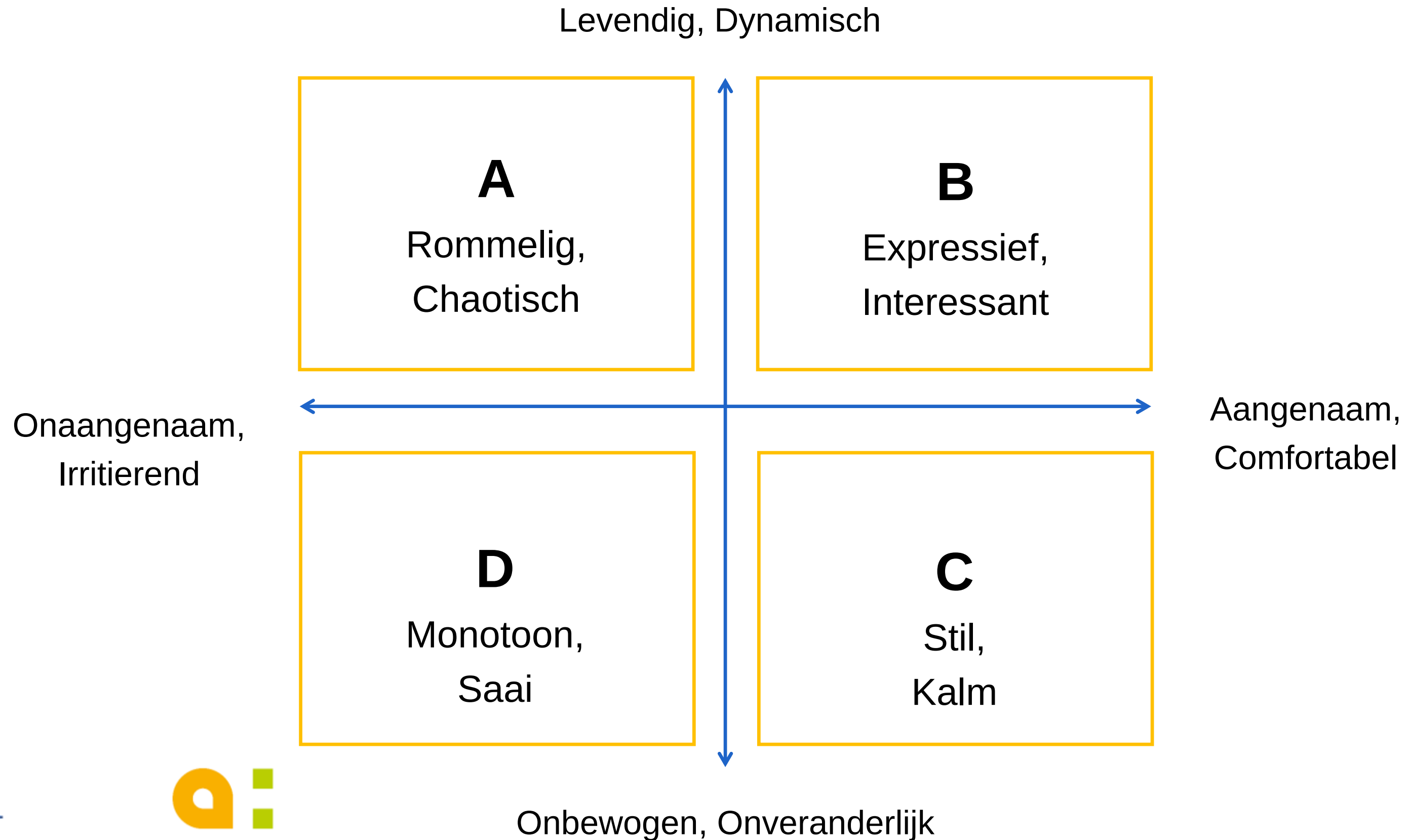
THE REFERENCE SOUNDSCAPE MODEL



LET'S TRY: GRAB YOUR REMOTE CONTROLS!

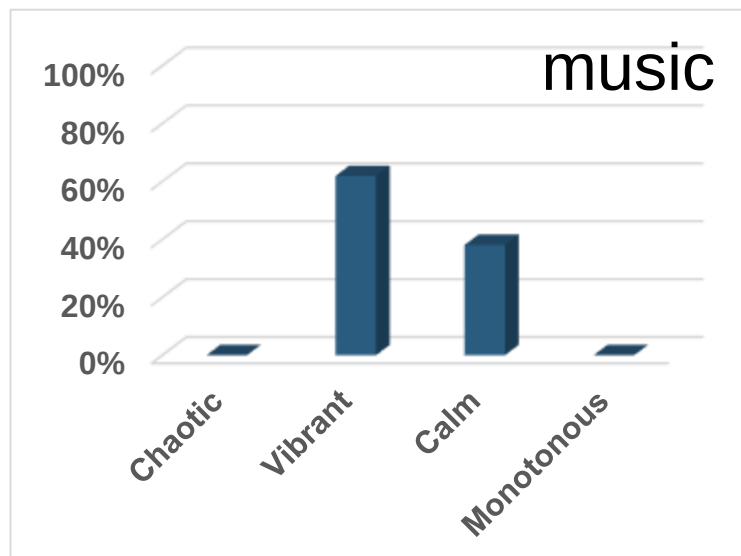
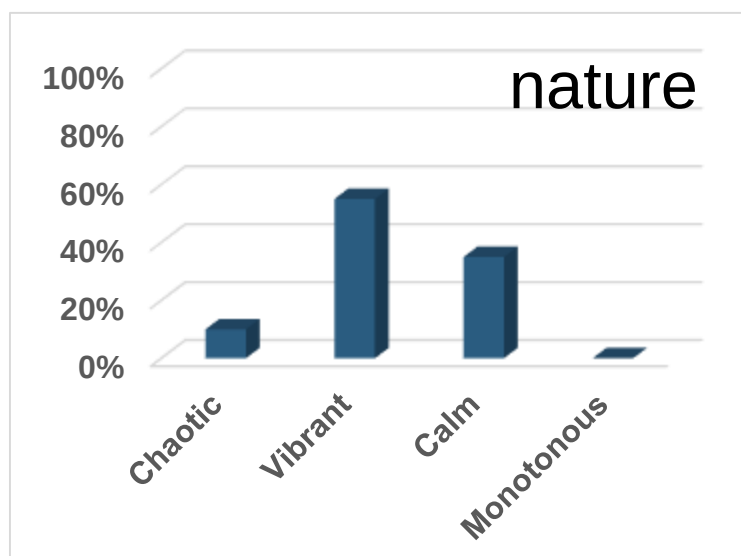
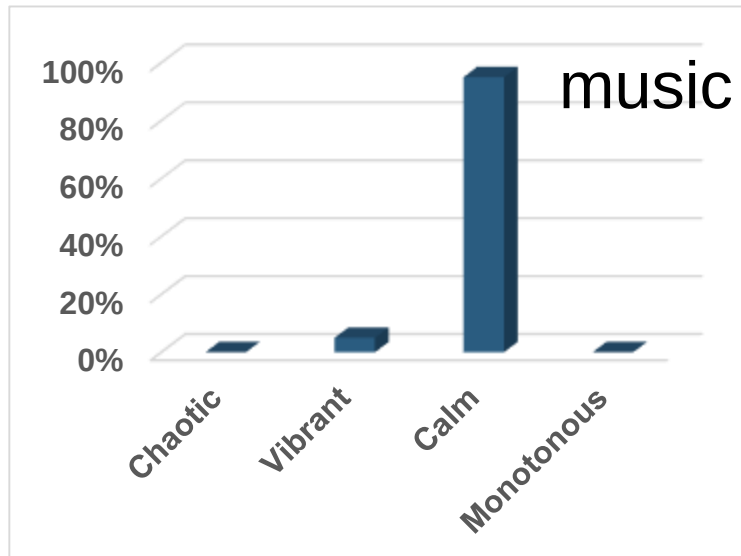
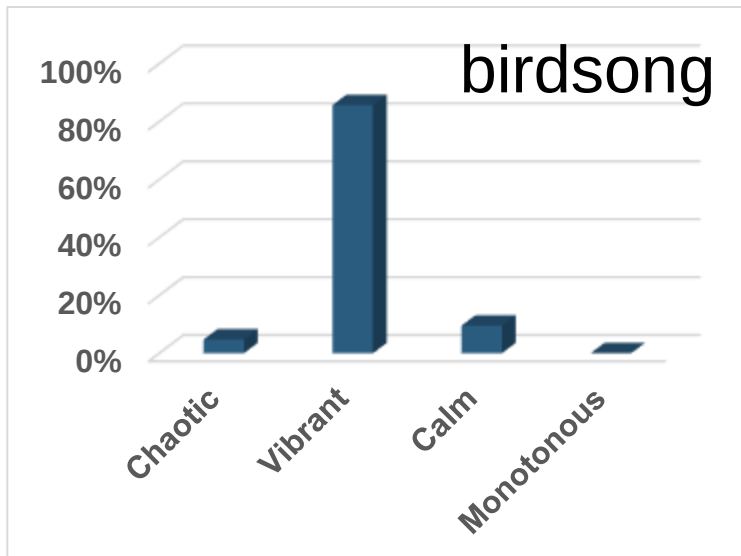
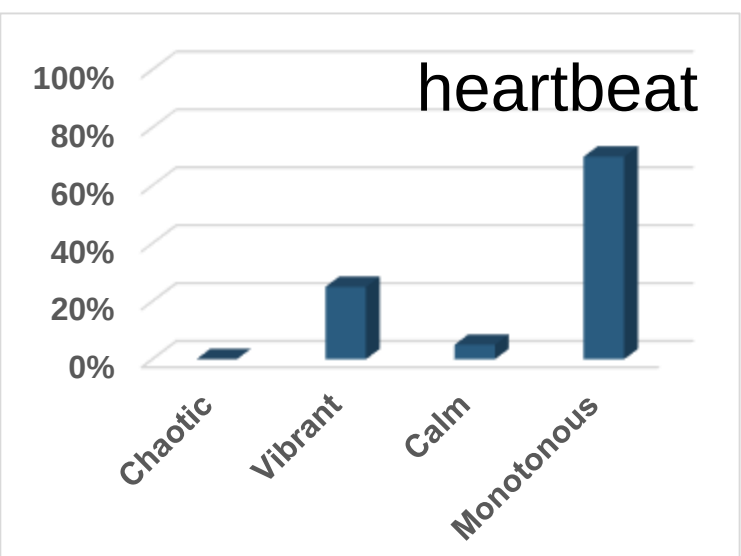
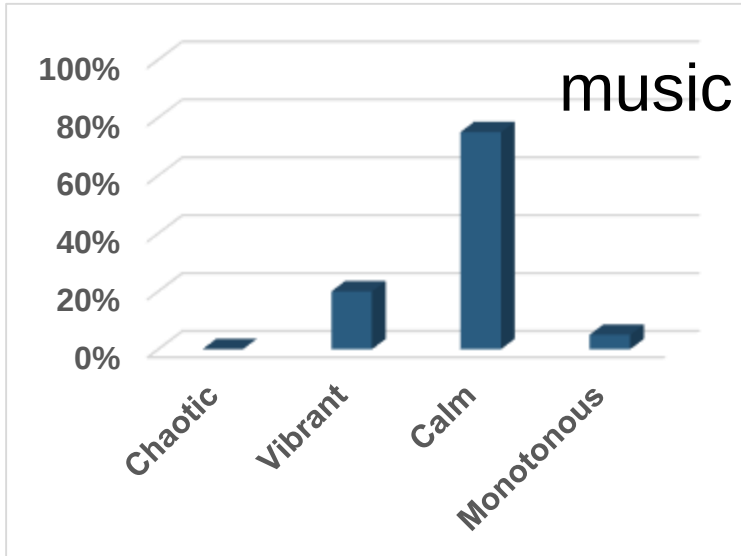
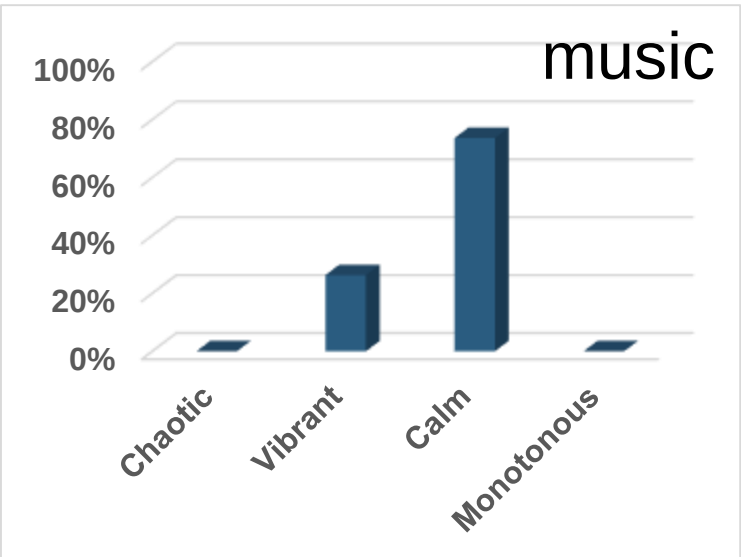
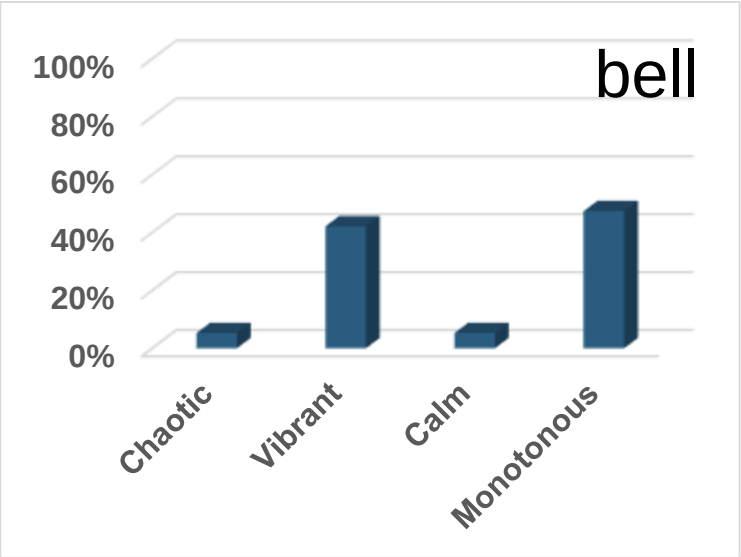
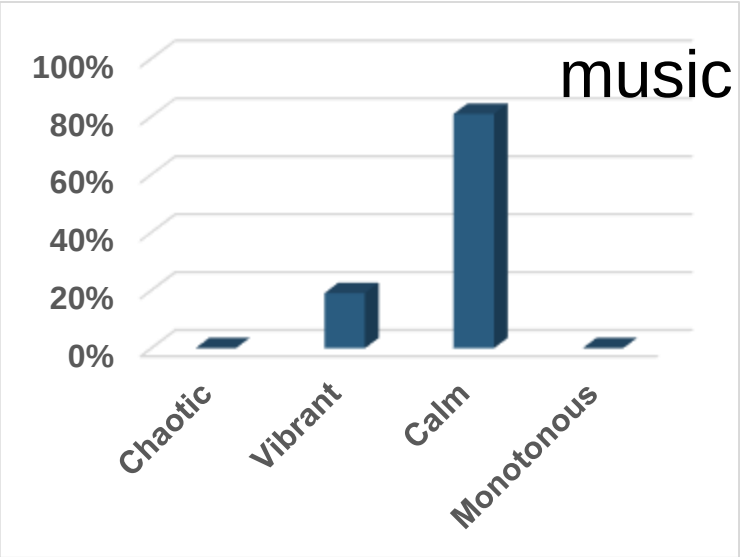


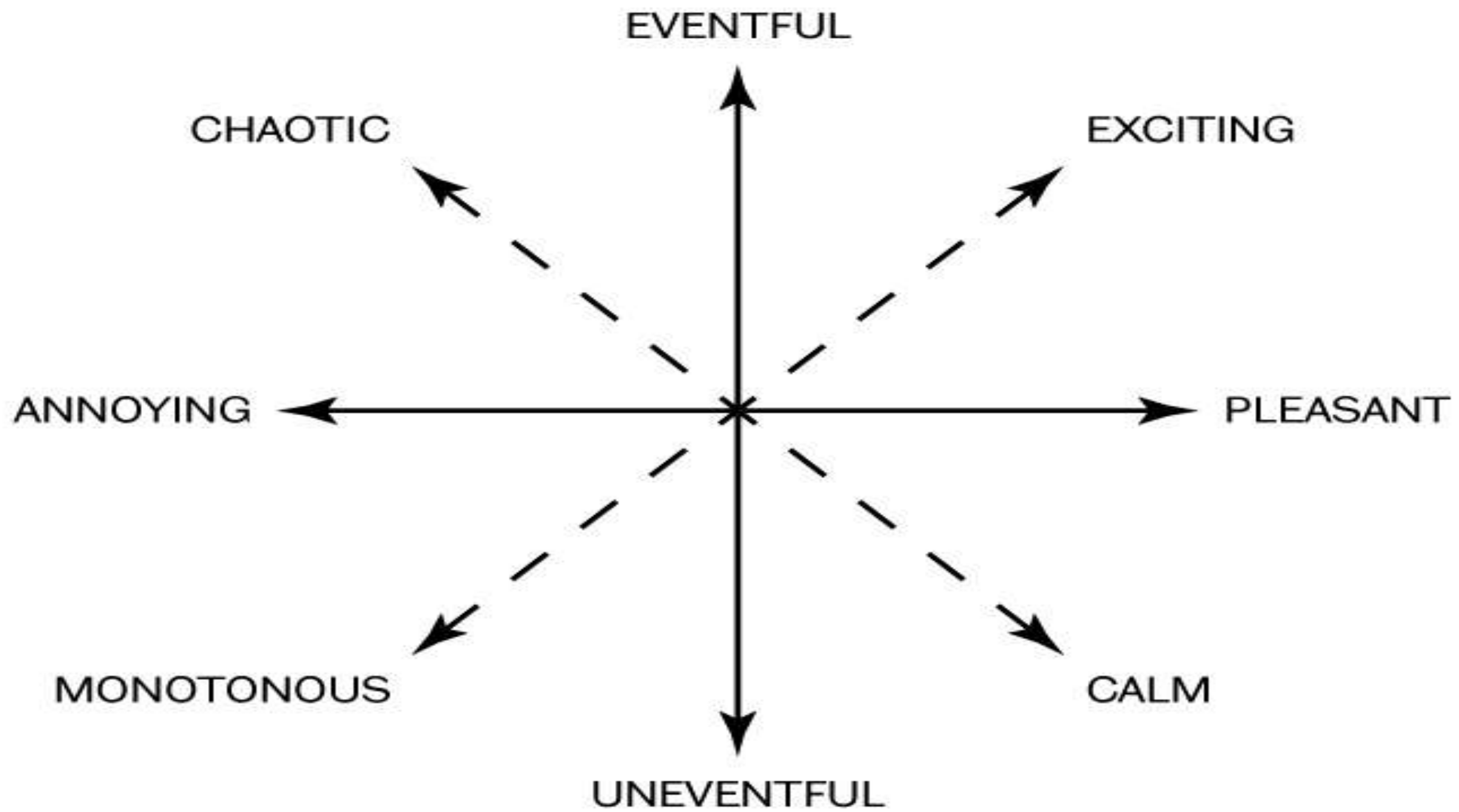
ONCE MORE: JUST TO BE SURE! 😊

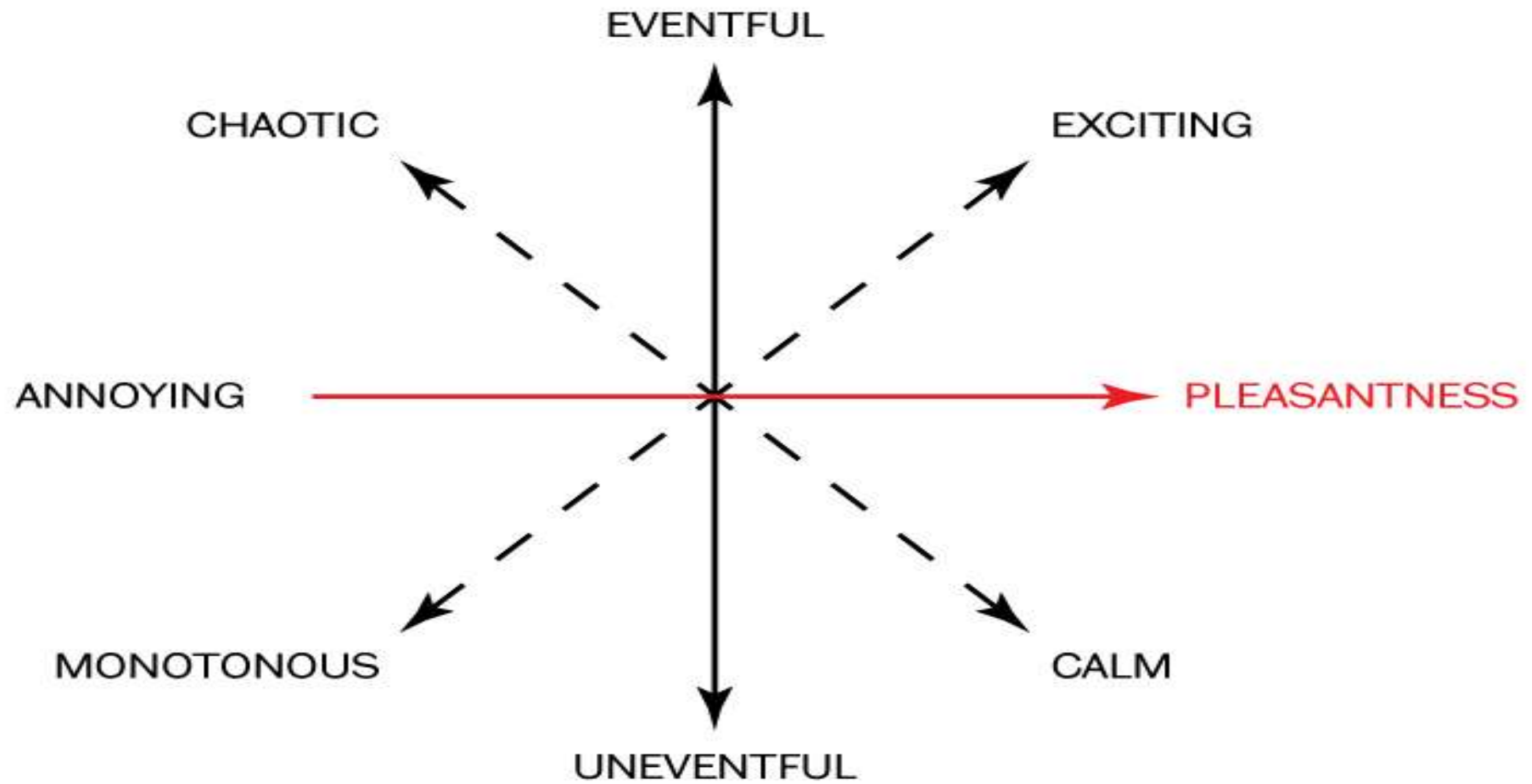


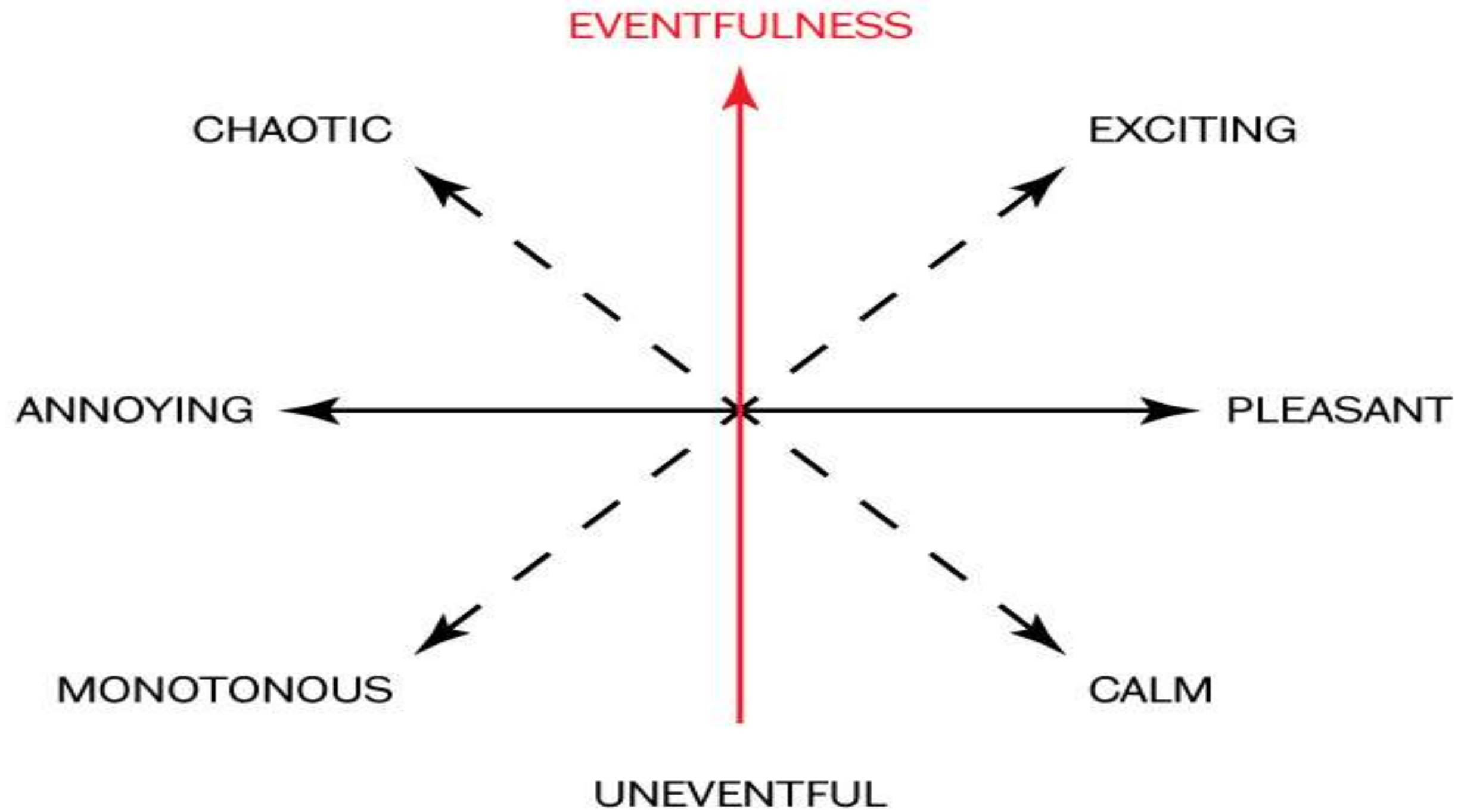
THAT'S IT! THANK YOU! 😊

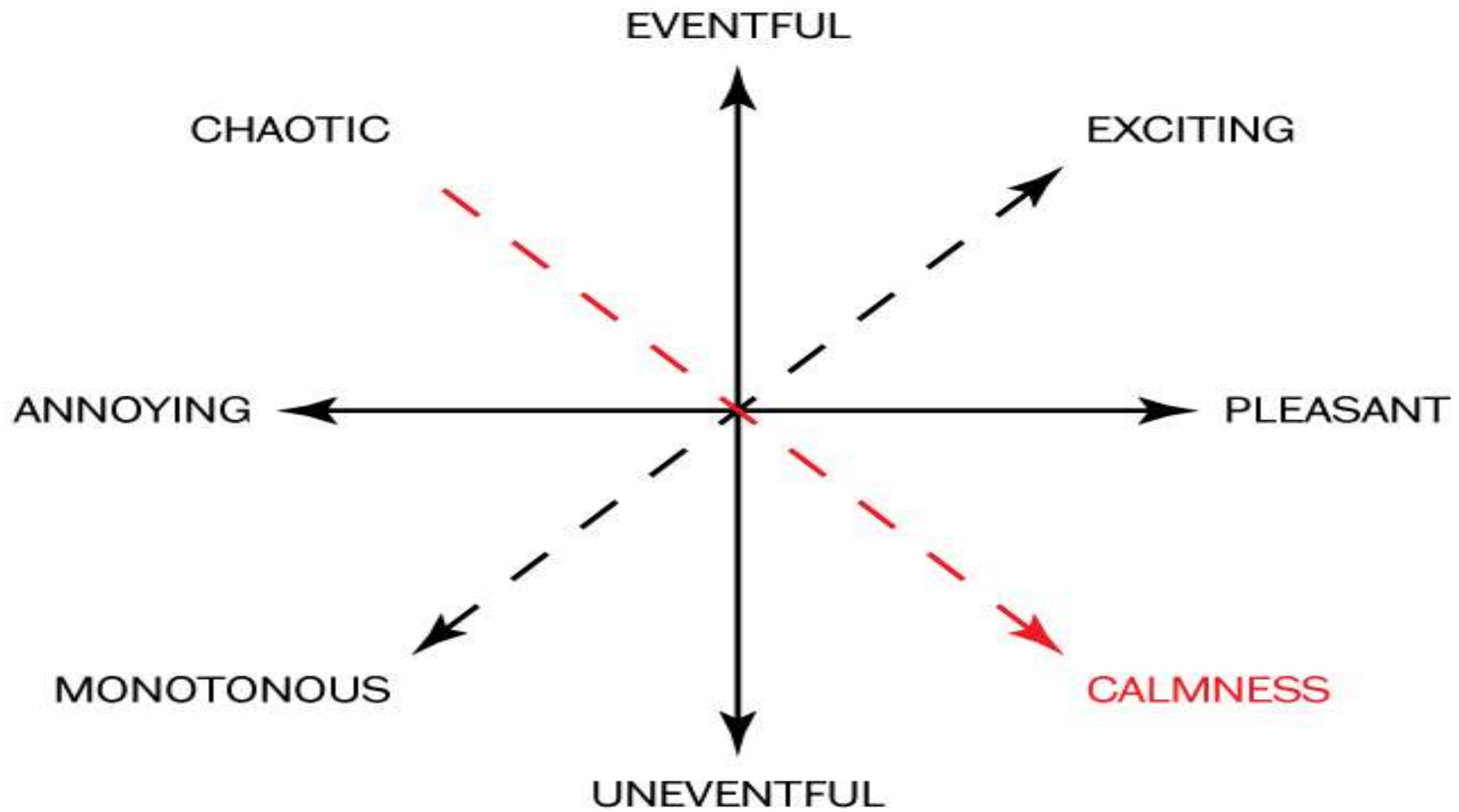
RESULTS FROM LAST EXPERIMENT

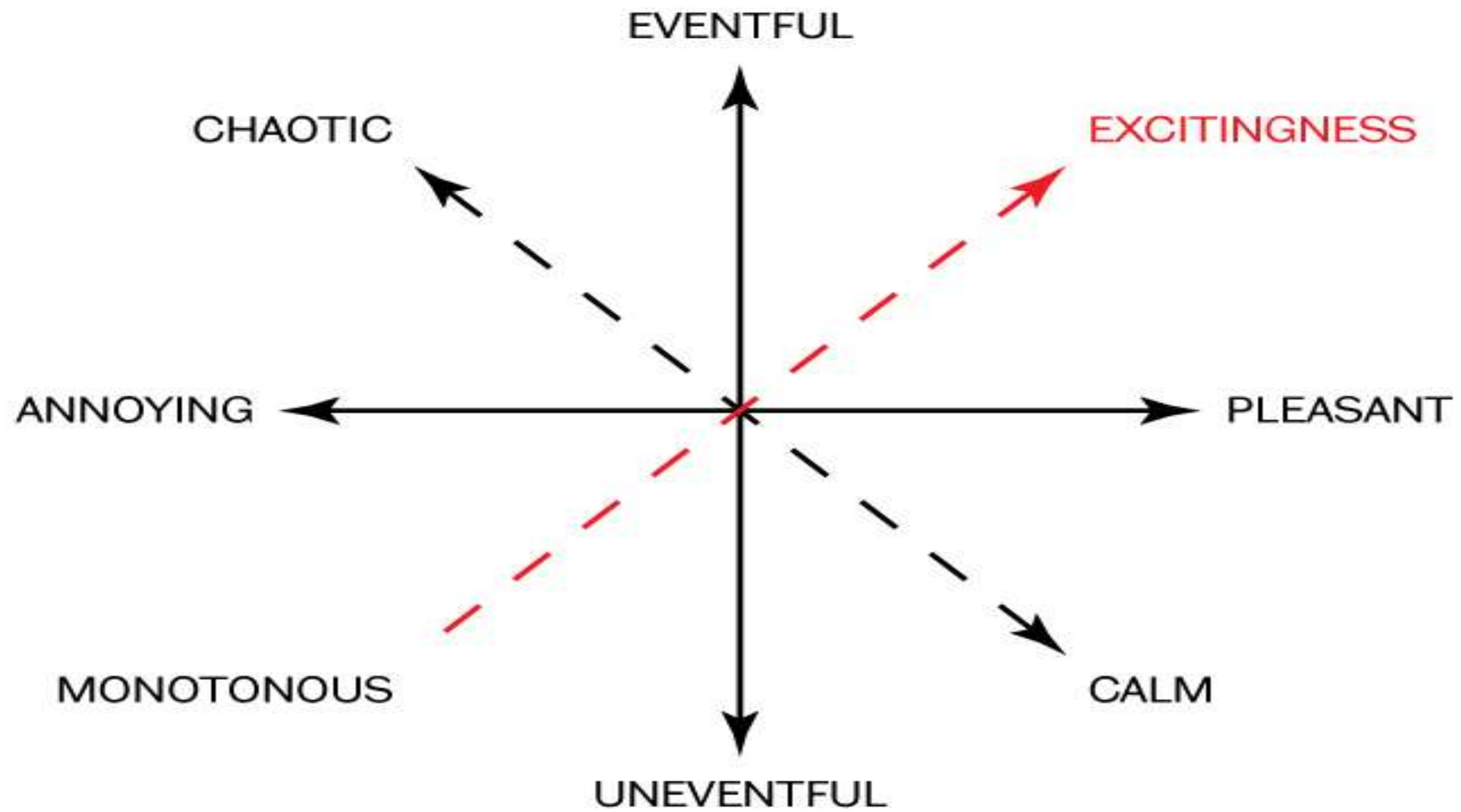


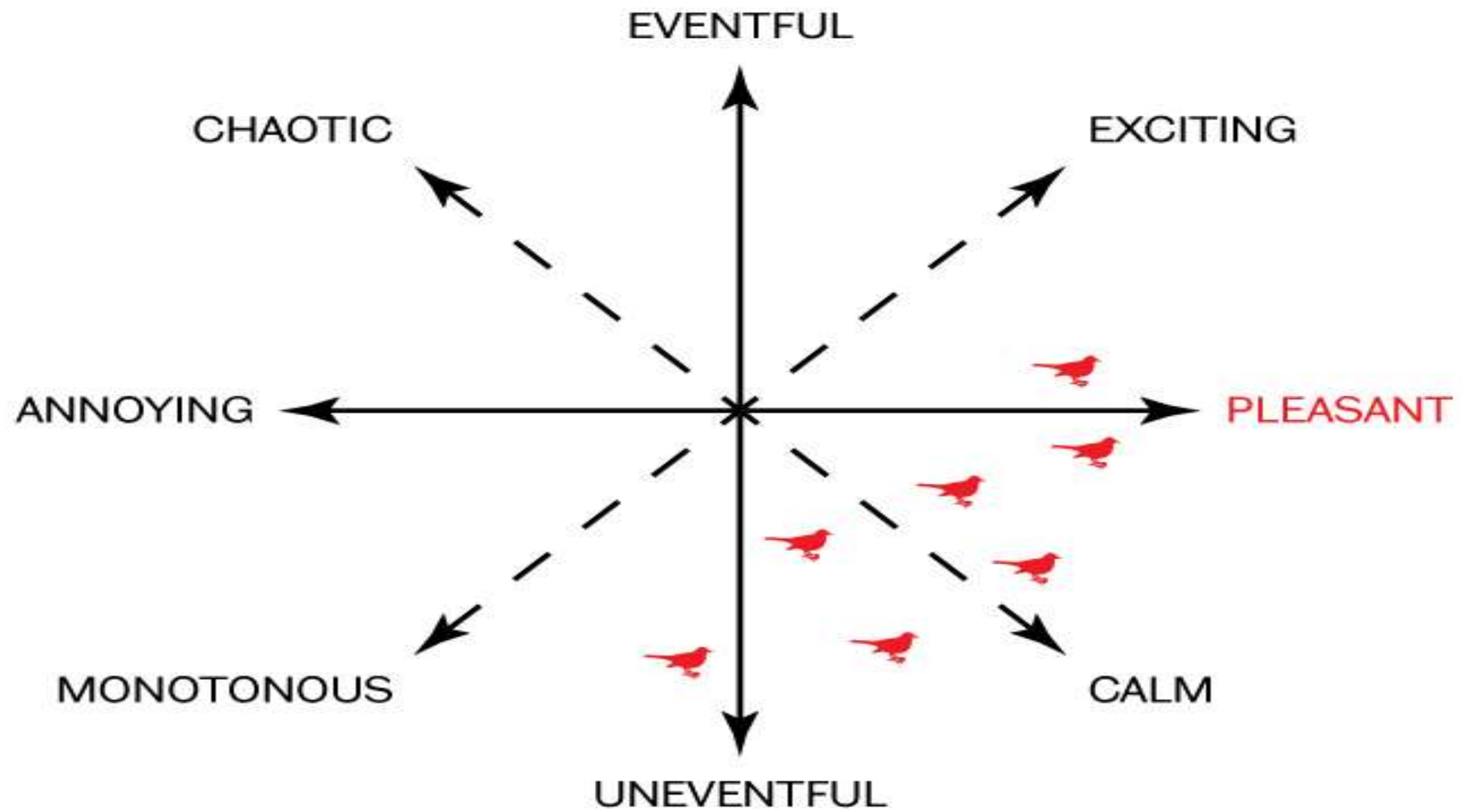


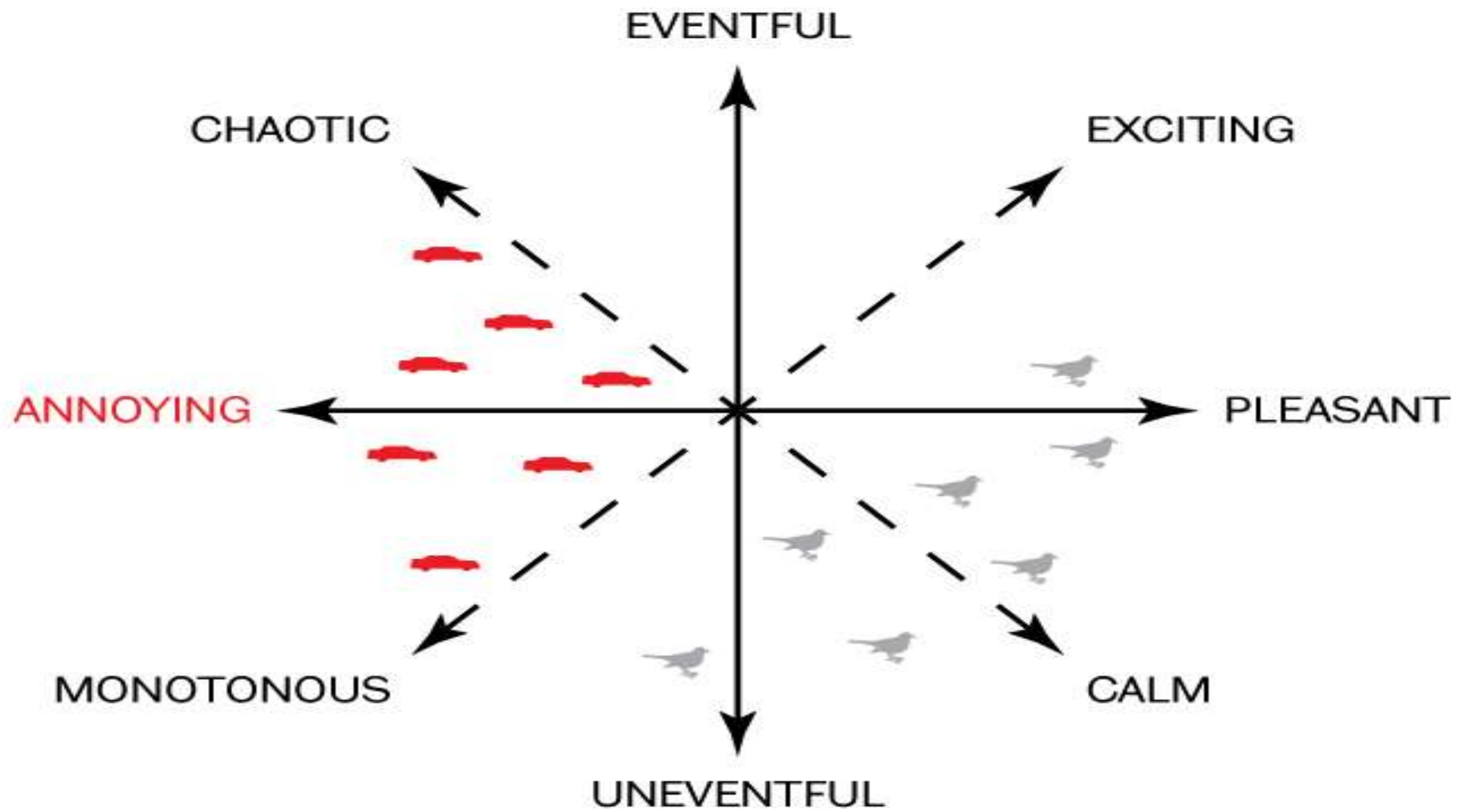


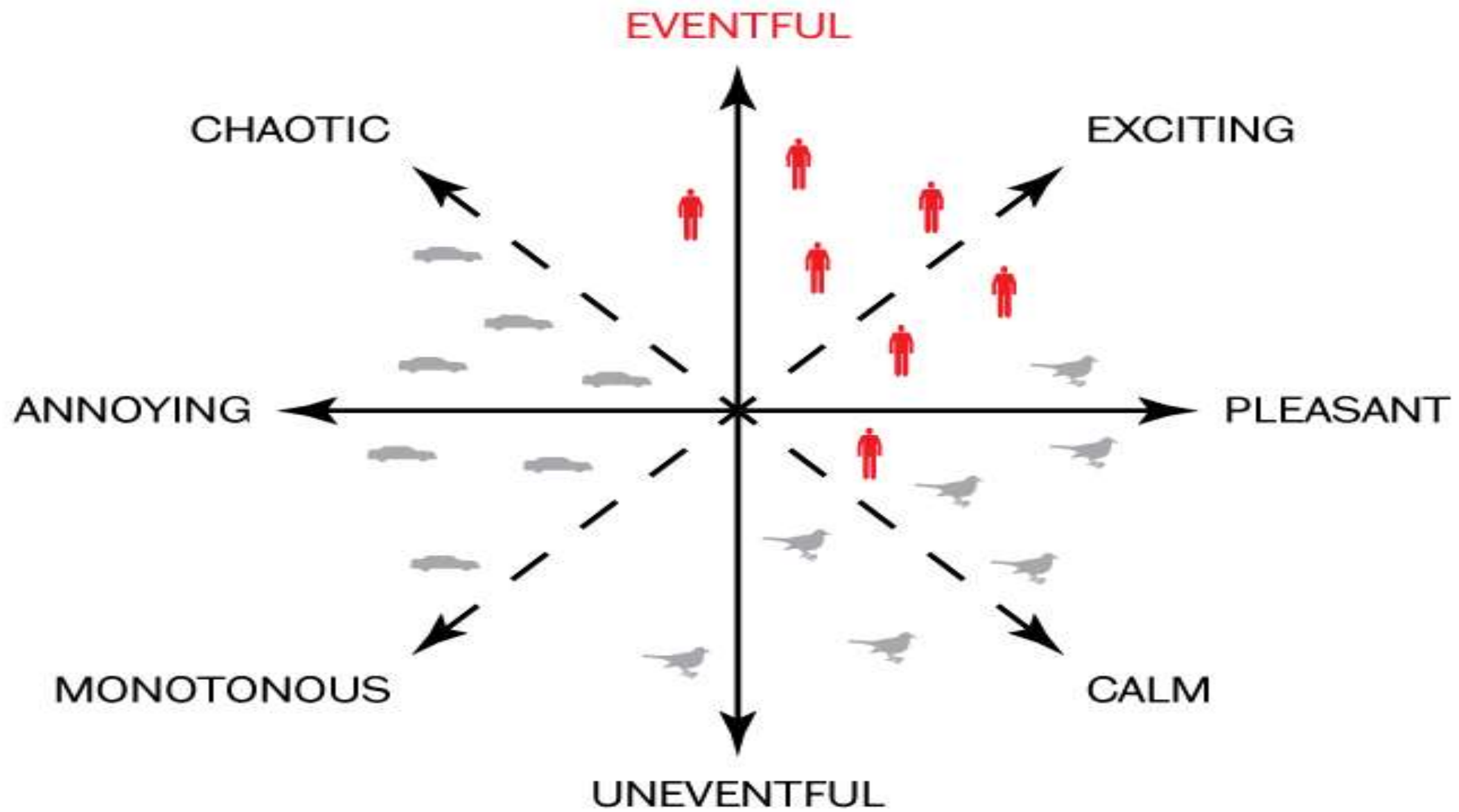


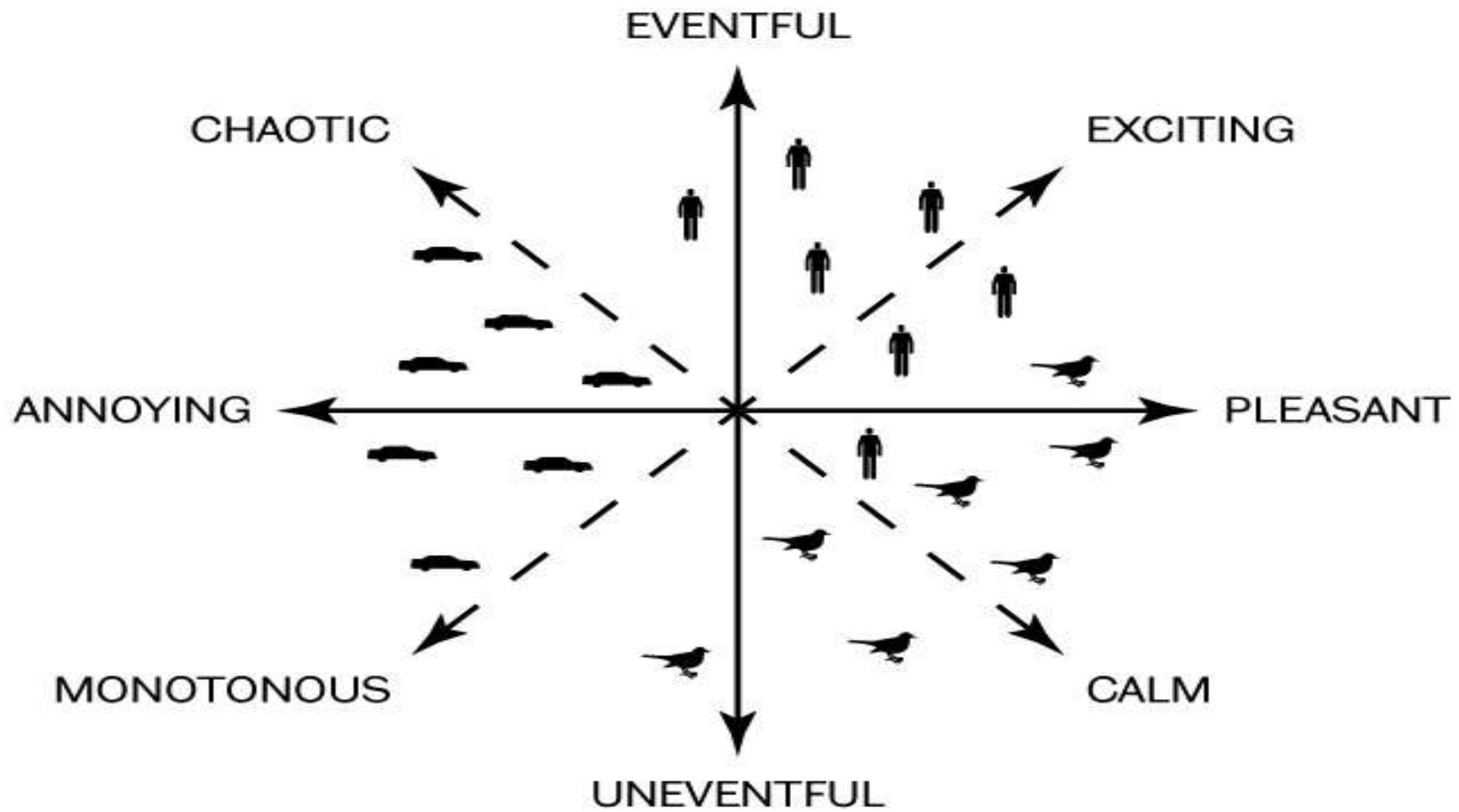






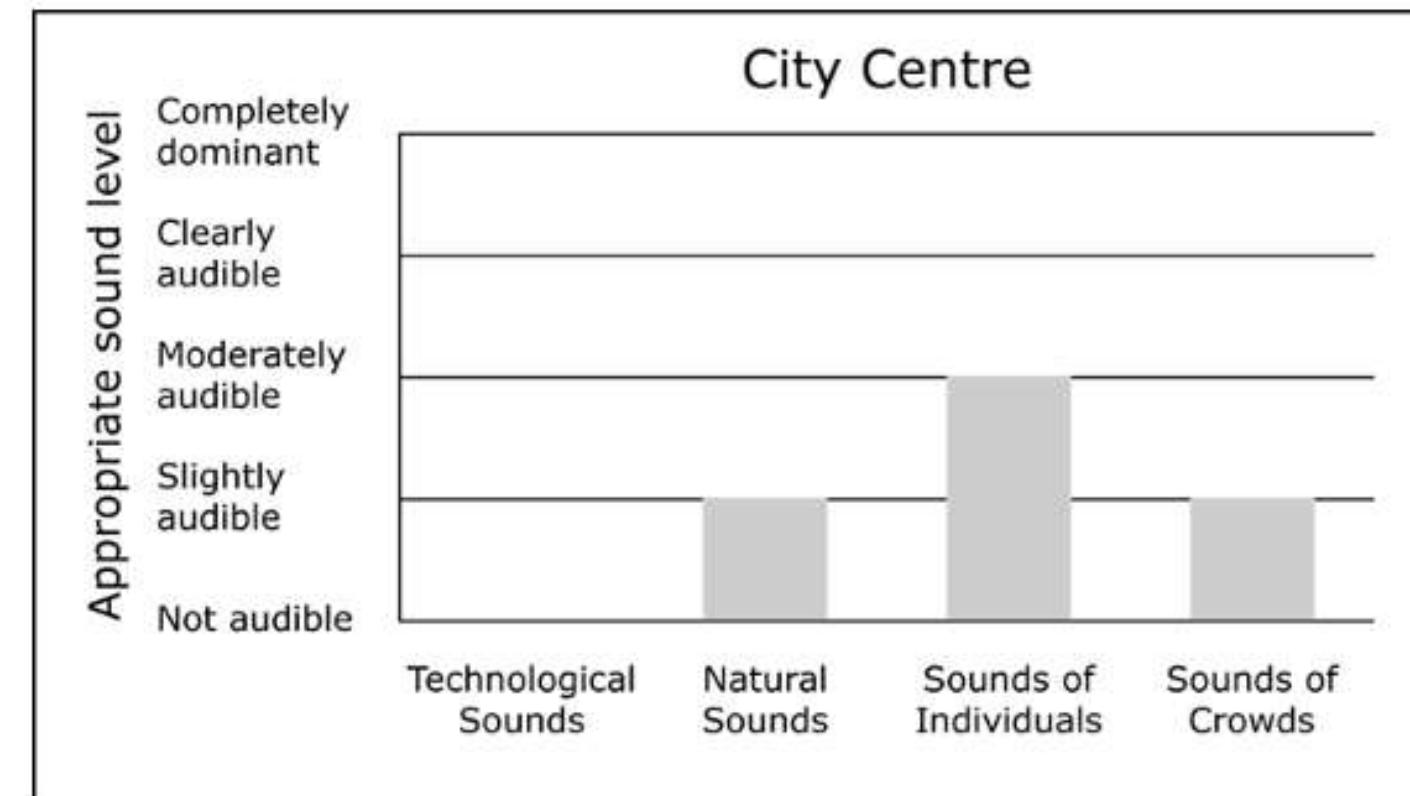
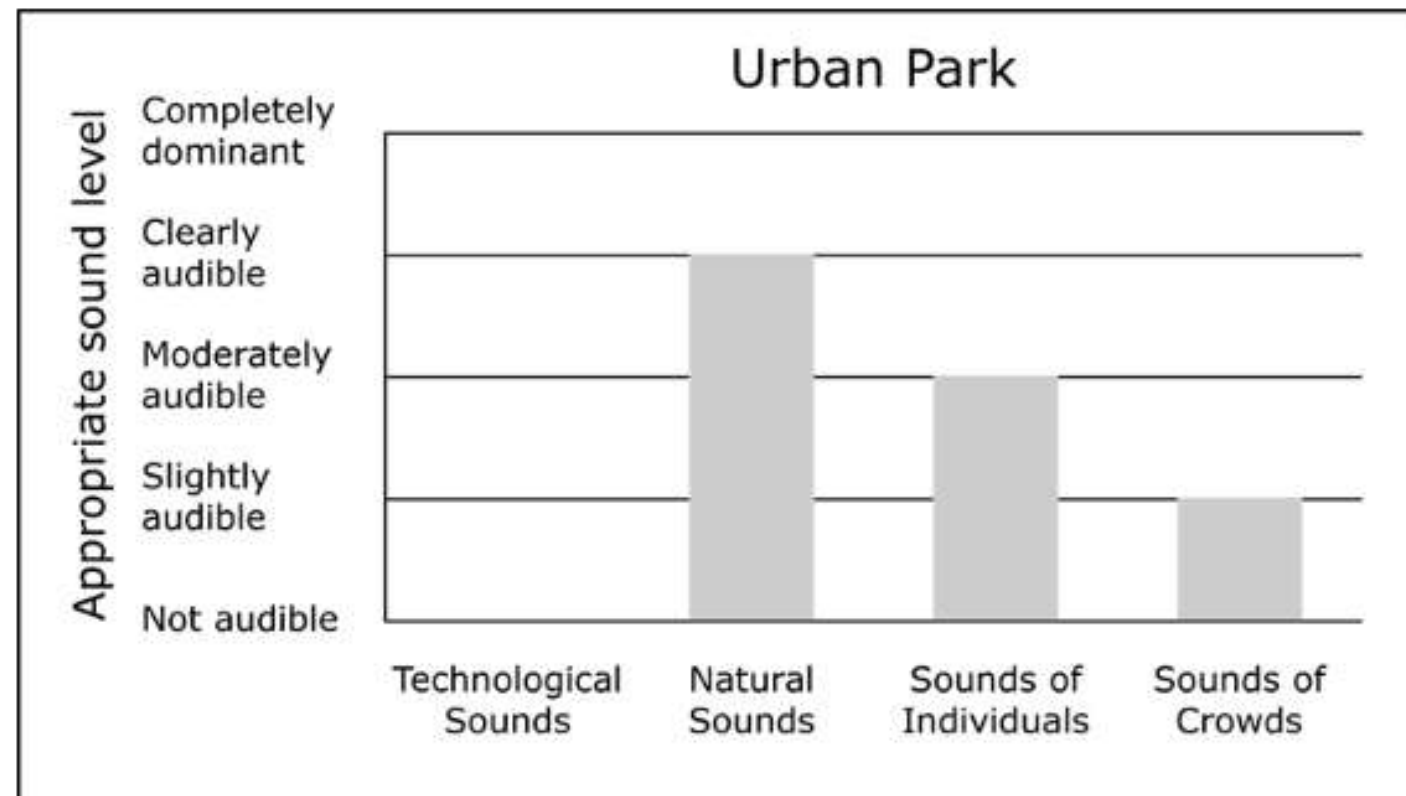
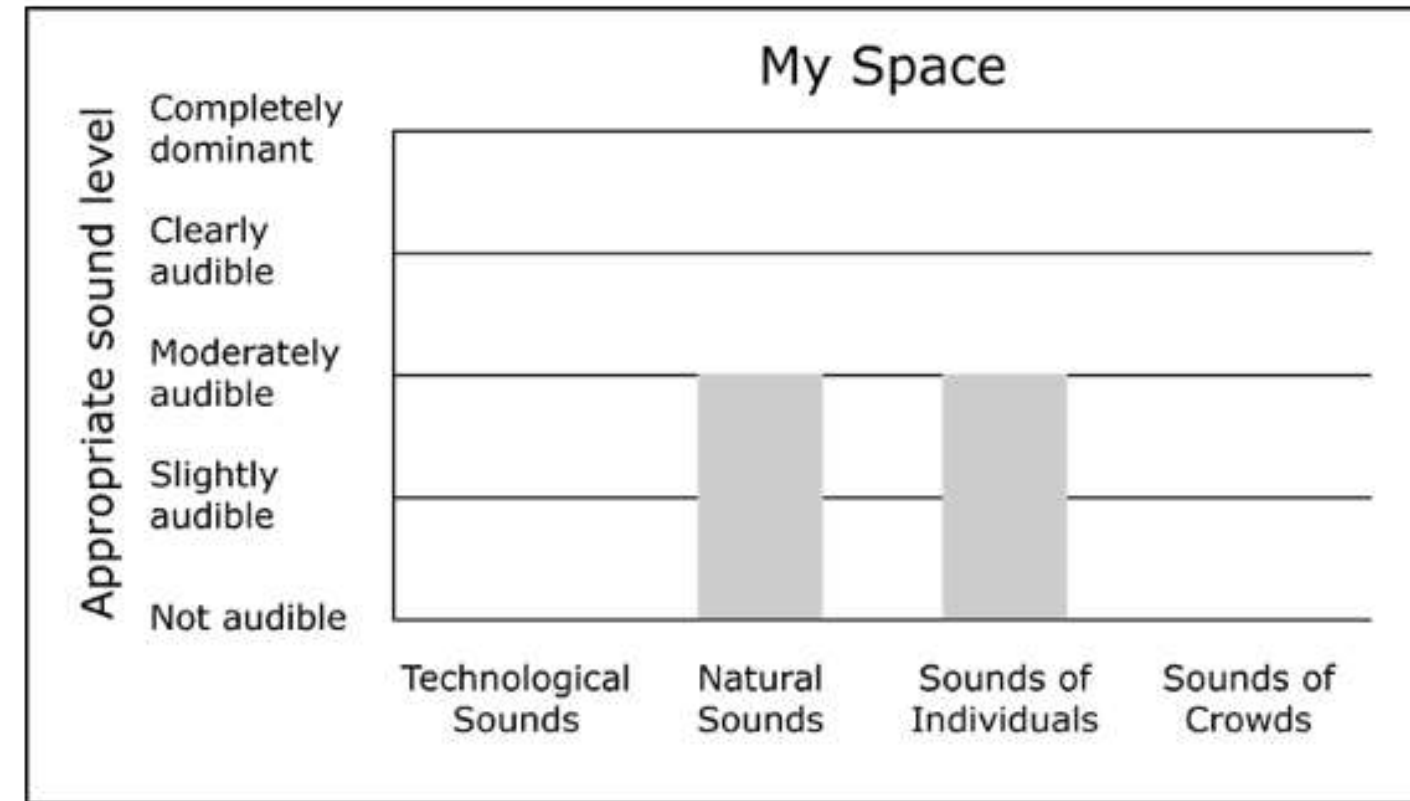






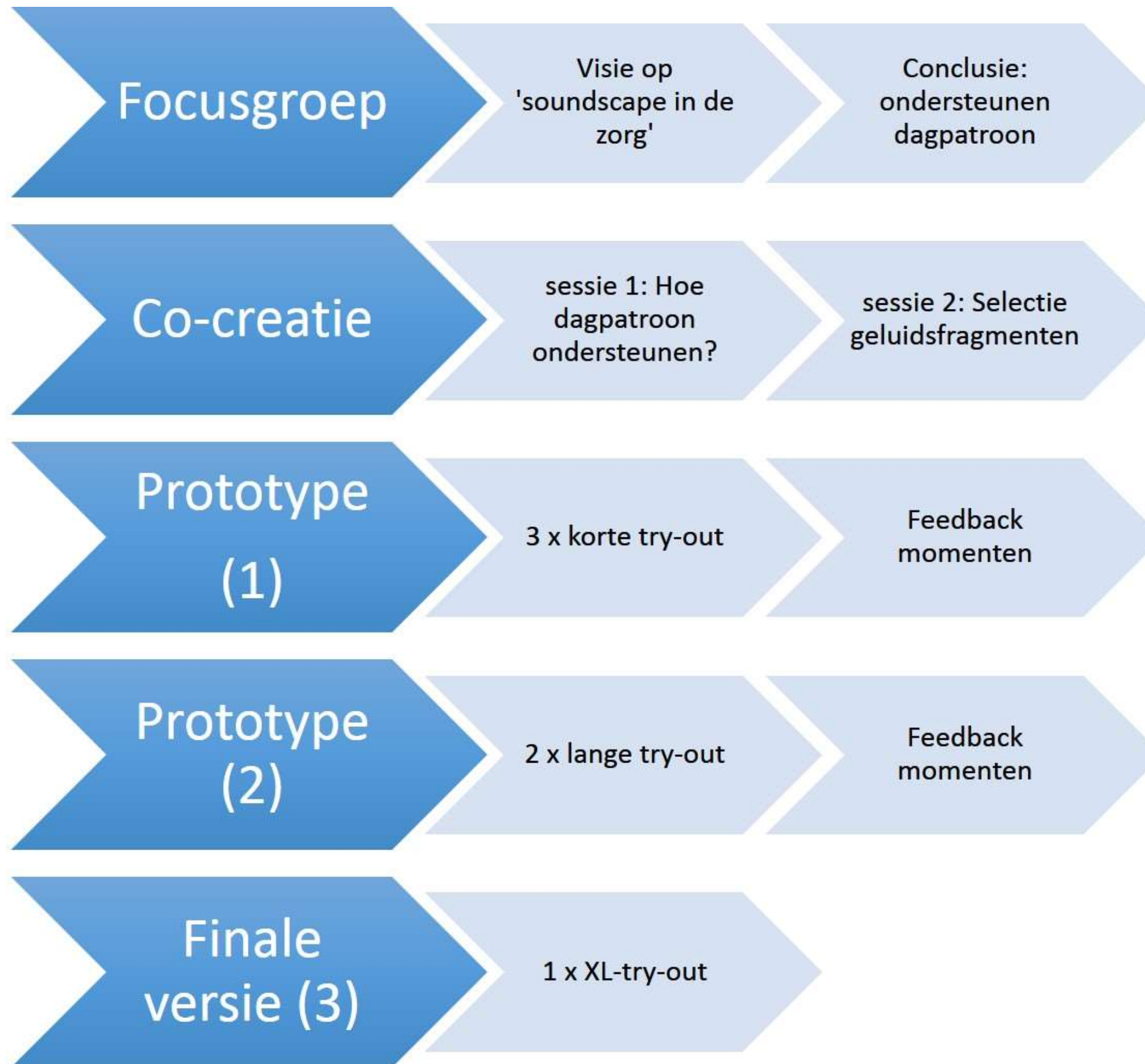
Lessons from Sheffield

- Staff and students at University of Sheffield were recruited to answer an online survey on their favourite outdoor place.
- Three sort of outdoor places were identified:
 - Urban park
 - City centre
 - My space
- For each category, a profile of appropriate sounds were established.
- Sounds of crowds in the profiles relates to sounds from public outdoor events (e.g. announcements, music, etc).



ONTWIKKELLEN EN EVALUEREN VAN SOUNDSCAPES

Tara Vander Mynsbrugge



FOCUSGROEP 13 OKTOBER 2017

Aanwezig

- 7 contactpersonen uit de WZC
- 3 Artevelde

Uitzetten grote lijnen



BRAINSTROM 6 DECEMBER 2017

Aanwezigen

- 6 bewoners
- 3 moderatoren

1 persona



BRAINSTROM 7 DECEMBER 2017

Aanwezigen

- 9 mantelzorgers
- 5 zorgverleners
- 2 moderatoren

2 persona's
(Halverwege sessie wissel)





notes

Sint Vincentius

- Korte try out
- Geen evaluatiemoment

Sint Jozef

- Korte try out
- Evaluatiemoment

Sporenpark

- Korte try out
- Evaluatiemoment

Aanpassing soundscape

Veilige Have

- Lange try out
- Evaluatiemoment

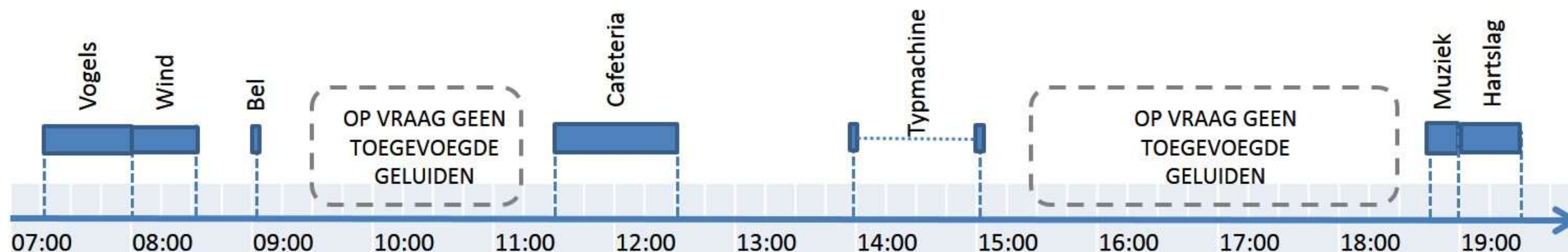
Leiehome

- Lange try out
- Evaluatiemoment

Aanpassing soundscape

Sint Vincentius

- XLange try out
- Evaluatiemoment gepland



Tijdschema

Type

07u15 – 08u30

Ochtendgeluiden: Vogels, wind dr bomen, ...

09u00

Bel

11u30 – 12u30

Restaurantgeluiden

14u00 – 15u00

Activerende geluidsomgeving

18u45 – 19u00

Avondmelodie

19u00 - 19u 30

Hartslag

TRY OUT 1

Sint Vincentius

- 13/03 – 21/03
- SC: 19/03 – 21/03
- Moeilijke opstart
- Feedback



FEEDBACK

Toen ik deze morgen opstond
hoorde ik de vogels fluiten,
thuis was dat luider dan hier.'
(Zorgverlener SV)

Ja, nu kan je iets horen,
maar ik denk niet dat de
bewoners dit horen.
(Zorgverlener SV)

TRY OUT 2

Sint Jozef

- 09/04 – 01/05
- SC: 16/04 – 23/05

Evaluatiemoment

- 26/04
- 3 aanwezigen (2 ZV – 1 MZ)



FEEDBACK

Tijdschema

- Start- en einduur (ochtendgeluiden, klok, ...)
- Frequentie (klok)

Geluiden

- Natuurgeluiden en muzikale intermezzo's
- Ritme hartslag
- Geluidsniveau

FEEDBACK

Ik zou niet zeggen dat dit nu al invloed heeft op probleemgedrag bij onze bewoners. Wel op het algemeen gevoel op de afdeling. Wat dan weer invloed heeft op het gedrag.

(Zorgverlener SJ)

TRY OUT 3

Sporenpark

- 26/04 – 15/05
- SC: 04/05 – 10/05

Evaluatiemoment

- 15/05
- 6 aanwezigen (2 ZV – 4 MZ)



DAGBOEK

- X. Hoorde het geluid van de tikmachine en ze vroeg aan mij om het af te zetten.
- Dag 1: Mevrouw vertoonde geen reacties, aan de vraag of ze de vogelgeluiden hoort zei ze dat ze al lang bezig zijn.
- Dag 2: Was heel onrustig omdat ze moest plassen de geluiden had ze niet gehoord.

FEEDBACK

Geluiden

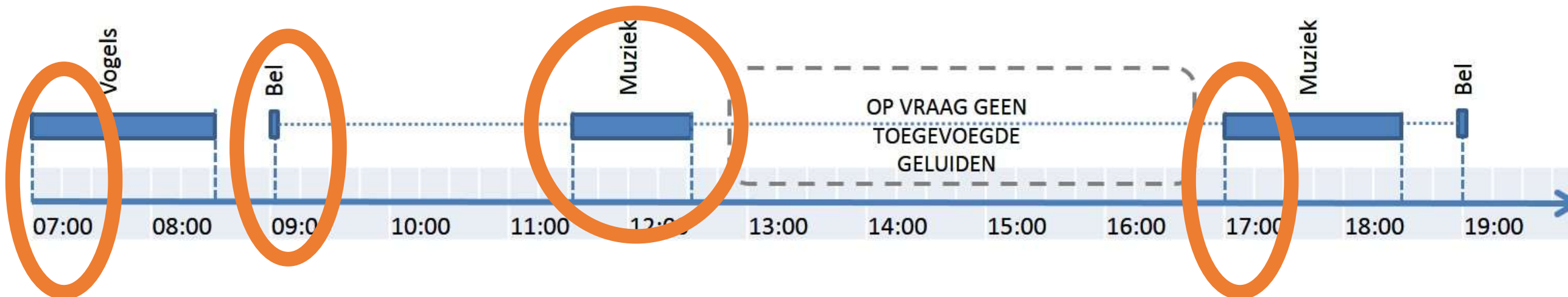
- Tikmachine wordt als irritant ervaren.
- ZV dacht dat bewoners al aan het eten waren (resto-geluiden).
- Geluidsomgeving moet visueel ondersteund worden.
- X. Ambetante reactie op vogelgeluiden, wordt heel ongemakkelijk bij de vogels.

AANPASSING SC

BEWONERSKAMER



LEEFZAAL



TRY OUT 4

Veilige Have

- 16/05 – 19/06
- SC: 24/05 – 13/06

Evaluatiemoment

- 19/06



FEEDBACK

Normaal laten we haar altijd op haar kamer, omdat ze roept in de leefzaal. Maar deze week is ze zo rustig tegenover anders dat we haar zelf al drie keer opgezet hebben en naar de leefzaal gebracht hebben. Ik weet natuurlijk niet of dat dat nu door die soundscape komt of niet.
(Zorgverlener VH)

TRY OUT 5

Leiehome

- 07/06 – 20/07
- SC: 20/06 – 10/07

Evaluatiemoment

- 10/07
- 3 aanwezigen (3 ZV)



FEEDBACK

Tijdschema

– ‘op maat’

Geluiden

- Muziek afstemmen op voorkeur bewoner?
- Seizoensgebonden (Kerstmelodie – stapgeluiden bos herfst,...)
- Hartslag – innemend – ‘er trilt hier iets’

Aanpasbaarheid

- Volume
- Aan/uit schakelen
- Gepersonaliseerde geluiden

TRY OUT 6

Sint Vincentius

- 04/07 – 03/09
- SC: 18/07 – 19/08

Evaluatiemoment

- 01/10



FEEDBACK

Waar zijn de vogels?

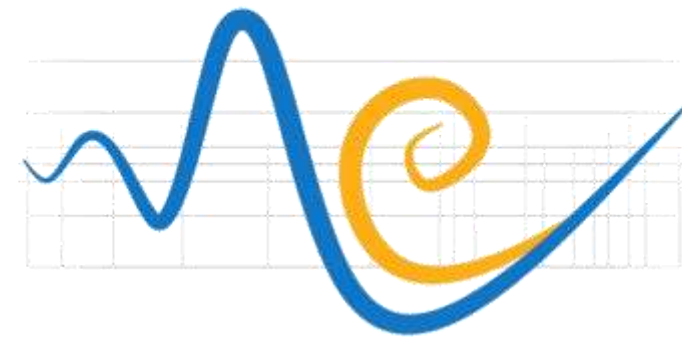
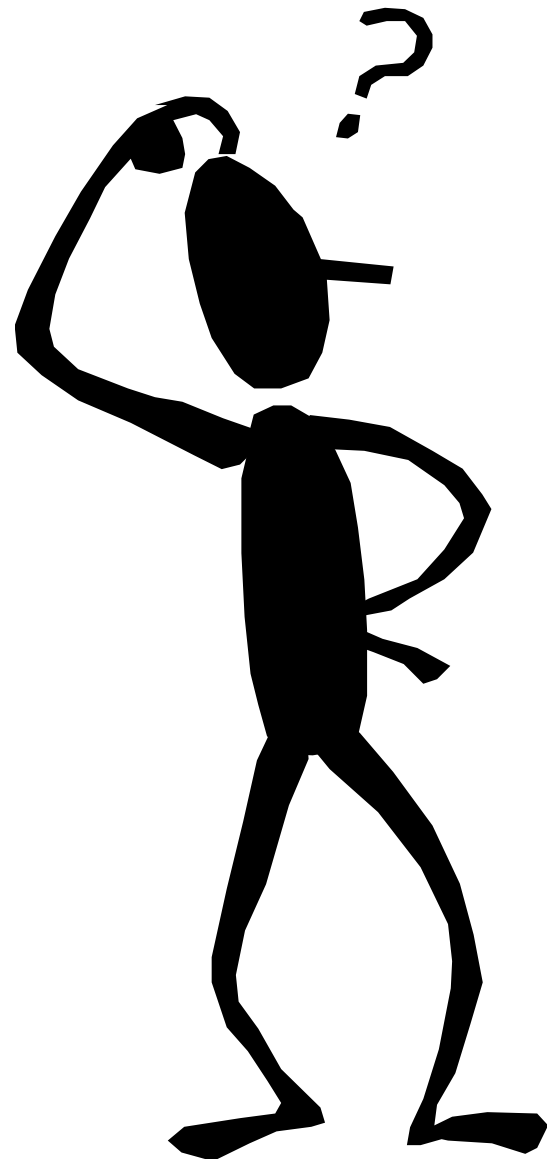
- Rustgevend (zeker in het begin)
- Hartslag te snel
- Vogels herkenbaar – vervelend na een tijdje
- Melodie - afstemmen met interieur / afwisseling
- Gewenning ZV – ‘op achtergrond’
- Zichtbaar effect – SC in te zetten voor ‘korte periode’

TECHNISCH

- Geïntegreerd systeem
- Instelbaar door ZV
 - Keuze geluid
 - Tijdschema
 - Geluidsterkte
- Akoestisch comfort ruimte (prikkelarme kamers)
- Zichtbaarheid
 - Installatie
 - Kabels



MEER INFO...



AcustiCare

www.acusticare.be/soundscapes-en-hun-benutting

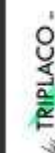
PANELGESPREK

Tetra project HBC.2016.0089

SLOTWOORD

AcustiCare – Benutting van soundscapes in de zorg

Tetra project HBC.2016.0089



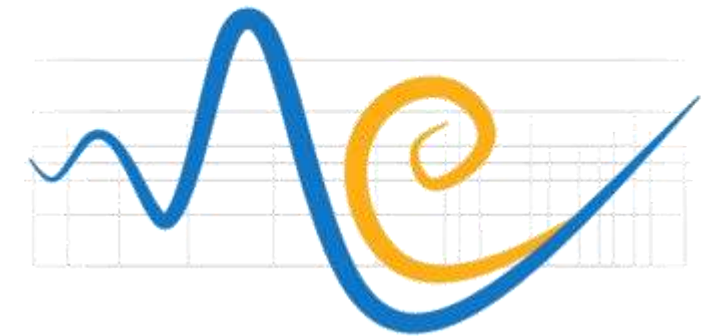
WAT VERDER? TOEKOMST ?

...

CONTACT:

p.devos@ugent.be

patricia.devriendt@arteveldehs.be



AcustiCare

www.acusticare.be

LAATSTE PROJECTNIEUWS



Project is geselecteerd op de shortlist van John Connel Awards 2018
(UK – Noise Abatement Society)

bekendmaking:

London, Palace of Westminster

Woensdag 24 Oktober (7.00 pm)

PROJECTTEAM



Patricia De Vriendt, Tara Vander Mynsbrugge, Dominique Van de Velde



Dick Botteldooren, Francesco Aletta, Pieter Thomas, Karlo Filipan, Paul Devos



Mirko Petrovic

