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Quality Criteria for Research and Measurement

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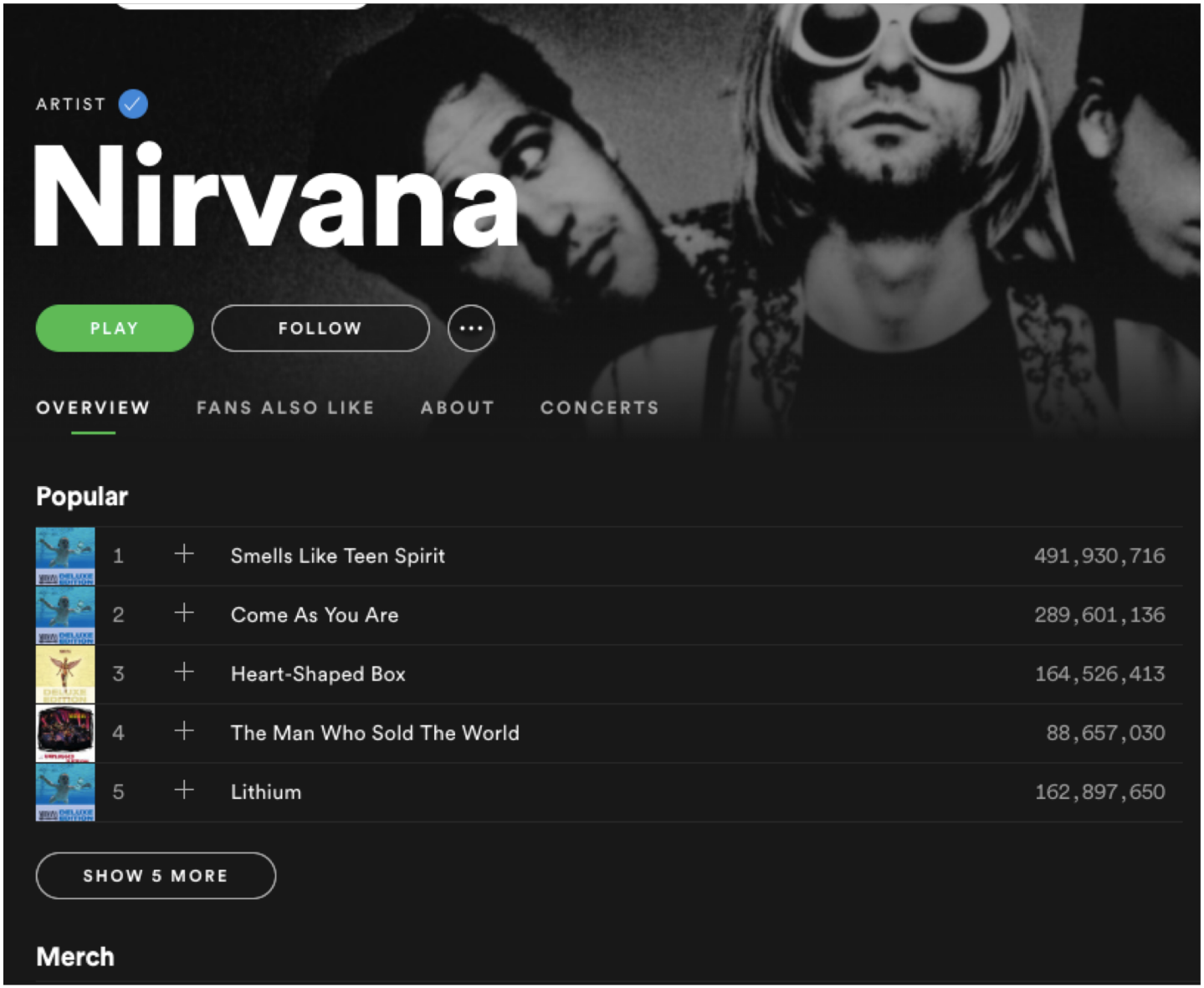
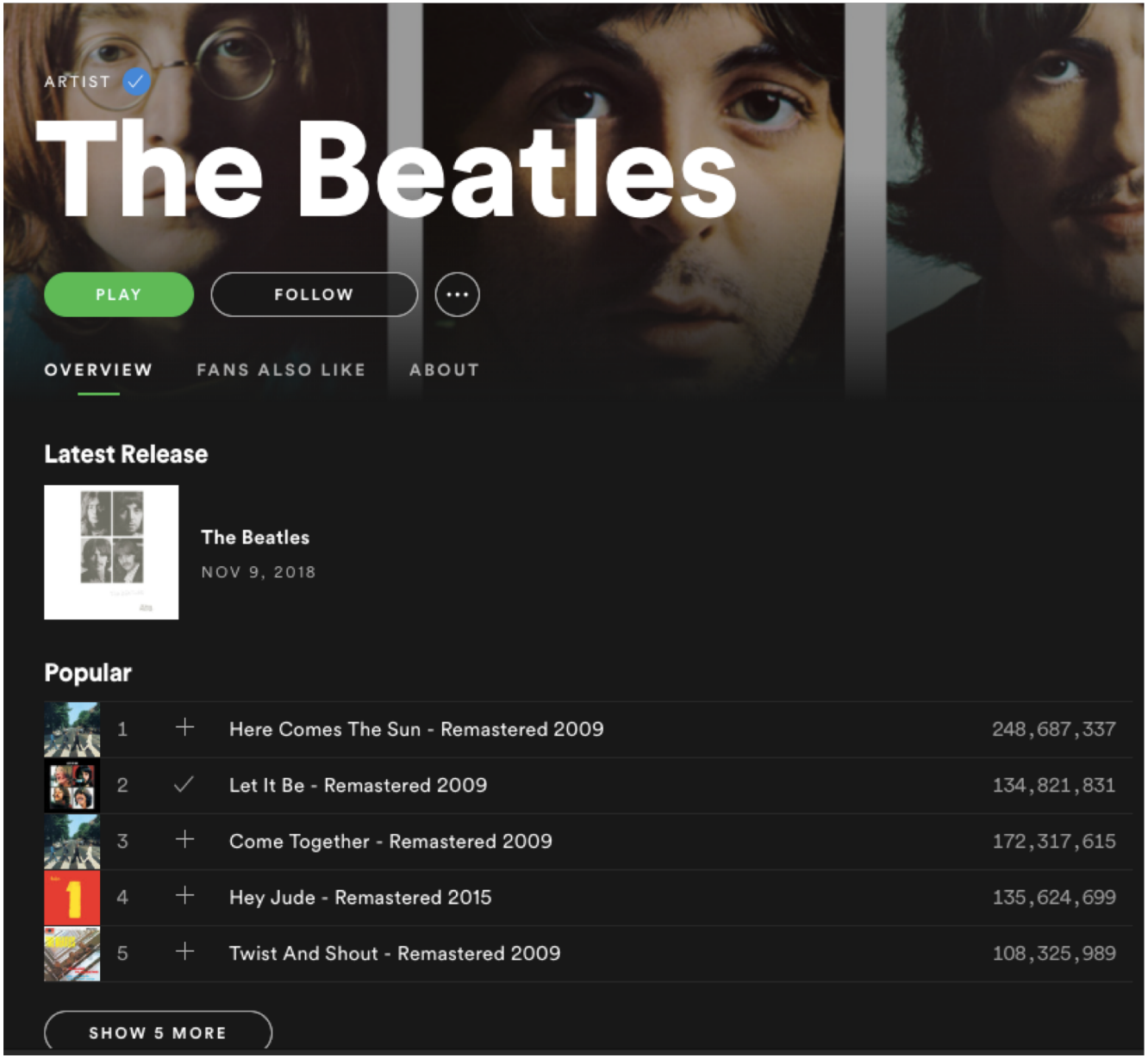
Outline

- Part I: What is quality?
  - a non scientific example: Quality of music
  - scientometrics vs. peer review
  - a new approach towards research quality
  - the case of the humanities
  - exercise: your discipline?
  - quality of research in social sciences in Macedonia
- Part II: So what?! Or: practical implications
  - how to conduct good research?
  - how to write a good paper?

What is Quality?!

- Quality is a complex construct
- Research quality is not defined
  - What makes research good research?
  - How can we find out whether research is of high quality?
  - Quality is context-dependent
- Professors always judge quality of others' research
  - „There are different standards of excellence, different kinds of excellence [yet I'm] pretty confident that I'd know it when I see it." (interviewee in Lamont, 2009, p. 159)
- Contested question
  - Better to take a step back and take another example
  - Example of quality of music (equally complex and contested)


ARTIST
Nirvana
PLAY
FOLLOW
OVERVIEW
FANS ALSO LIKE
ABOUT
CONCERTS
Popular
1 Smells Like Teen Spirit 491,930,716
2 Come As You Are 289,601,136
3 Heart-Shaped Box 164,526,413
4 The Man Who Sold The World 88,657,030
5 Lithium 162,897,650
SHOW 5 MORE
Merch


ARTIST
The Beatles
PLAY
FOLLOW
OVERVIEW
FANS ALSO LIKE
ABOUT
Latest Release
The Beatles
NOV 9, 2018
Popular
1 Here Comes The Sun - Remastered 2009 248,687,337
2 Let It Be - Remastered 2009 134,821,831
3 Come Together - Remastered 2009 172,317,615
4 Hey Jude - Remastered 2015 135,624,699
5 Twist And Shout - Remastered 2009 108,325,989
SHOW 5 MORE


ARTIST
Wolfgang Amadeus Mozart
PLAY
FOLLOW
OVERVIEW
FANS ALSO LIKE
ABOUT
Latest Release
Mozart: Piano Sonatas, Vol. 1
JAN 4, 2019
Popular
1 Piano Concerto No. 21 in C Major, K. 467 "Elvira Madigan": II. Andante 14,416,793
2 Requiem, K. 626: Lacrimosa 29,015,492
3 Le Nozze di Figaro, K. 492: Sinfonia 17,820,531
4 Mozart / Arr Grieg: Piano Sonata No. 16 in C Major, K. 545: I. Allegro (... 12,241,044
Piano Quartet No. 1 in G Minor, K. 478: II. Andante 9,743,794
SHOW 5 MORE
Fans Also Li
Felix

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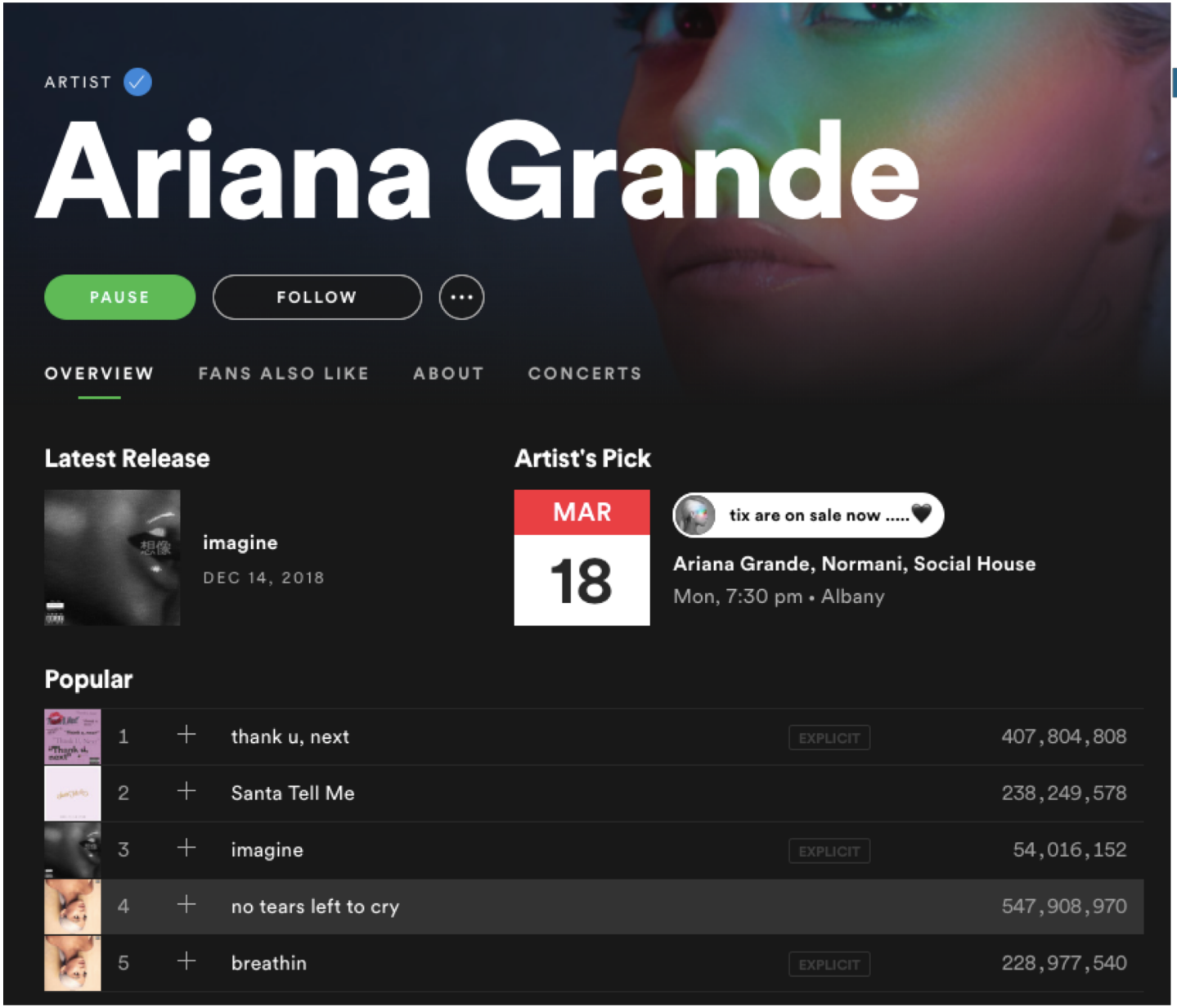

ARTIST
Ariana Grande
PAUSE
FOLLOW
OVERVIEW
FANS ALSO LIKE
ABOUT
CONCERTS
Latest Release
imagine
DEC 14, 2018
Artist's Pick
MAR
18
tix are on sale now .....
Ariana Grande, Normani, Social House
Mon, 7:30 pm • Albany
Popular
1 thank u, next EXPLICIT 407,804,808
2 Santa Tell Me 238,249,578
3 imagine EXPLICIT 54,016,152
4 no tears left to cry 547,908,970
5 breathin EXPLICIT 228,977,540

OK, Maybe the Followers?

Albums Sold?

- Nirvana: 96.5 Millions
- Beatles: 600 Millions
- Mozart: approx. 10 Millions
- Vytautas Kernagis: No information to be found but active also in rock opera and musicals
- Ariana Grande: <6 Millions

→Obviously, Spotify's data base is biased, so are album sales: coverage issues, language issues, music styles, live versus recordings etc.

New Metric?

- Today, Nielsen tallies up digital and physical album sales, digital single sales and online audio streams. That gives you the new metric that the industry lives and dies by: the album-equivalent unit.
- Drake has sold only about 300,000 physical CDs. But the album enjoyed 1.2 million digital album sales, 5 million digital singles sales and an astonishing 2.8 billion audio streams. Nielsen divides digital singles by 10 and audio streams by 1,500 to create new numbers that equal the revenue from a single album sale. → 4 million album equivalents
- https://www.washingtonpost.com/news/the-switch/wp/2016/12/27/no-mozart-did-not-have-have-2016s-best-selling-cd-what-really-happened-is-even-more-surprising/?noredirect=on&utm_term=.a7482230888e

Other Approach to Judge Quality of Music?

- Ask important people in the music business
  - Are you getting the answer you want if you ask:
    - Boss of Universal Music or Sony Music?
    - Your piano teacher?
    - Grammy procedure: Music industry and former winners
  - Conservative Bias
    - They will tell you what they (and you) already know
    - Classical Music, Charts
    - Not the innovative, avant-garde kind of music

The same applies to research evaluation (so far)

Peer Review

Qualitative (reading texts)

Advantages:

- Discipline specific
- Research-oriented

Disadvantages:

- Old-Boys-Networks
- Conservative bias
- Subjective

Scientometrics

Quantitative (analysis of numbers)

Advantages:

- „objective“
- Difficult to game-play

Disadvantages

- Mainstreaming
- Discipline- and region biases
- Adverse effects on behaviour

Peer Review

- Experts (scholars from the same field) read the research and decide whether it is meeting the standards of academia
- Ex-post peer review: research has been done
  - Manuscript peer review
    - journals, books; also theses
  - Research evaluation
    - medium to long-term work of professors is evaluated
- Ex-ante peer review: research is not done yet, only planned
  - Grant peer review
    - application for funds for research, research projects

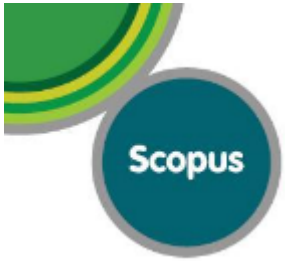
Peer Review: Issues

- Subjectivity
  - Outcome/decision depends on persons selected to review
  - Low validity: No clear reasoning behind judgment: “I know it when I see it” (Lamont, 2009; Thorngate, Dawes & Foddy, 2009)
- Low interrater reliability (Daniel et al., 2007)
  - Two reviewers for the same work come to different result
  - Issue: we don’t even know whether we want high interrater reliability (Risk: Old-Boys Network, negotiation, tit-for-tat)
- Biases (Daniel et al., 2007)
  - Conservative bias: experts tend to prefer research of their own style
  - Other attributes than quality important: gender, approach, country…
- Moderate predictive validity (Bornmann & Daniel, 2008a)
  - Research judged not good enough is later found to be important

Scientometrics vs. Bibliometrics vs. Altmetrics

- No exact distinction (Glänzel, 2003: synonyms)
- Bibliometrics (Pritchard, 1969):
  - Bibliometrics is “the application of mathematical and statistical methods to books and other media of communication.“ (Pritchard, 1969)
  - Citation analysis, analysis of document types, author networks etc.
  - What can be done with meta data from publication data bases
- Scientometrics (Nalimov & Mulchenko, 1969, Наукометрия):
  - Analysis of communication and research processes
  - Includes bibliometrics but makes use also of other data on scholarly work: prizes, presentations, curricula etc.
- Altmetrics (Priem et al., 2010; Zuccala et al., 2015):
  - Umbrella term for bibliometrics with Web 2.0 data: analysis of Twitter feeds, Mendeley, Research Gate, download statistics from journals etc.

Data availability as a driver: growth



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Bibliometrics are not valid in the SSH

- Consensus among bibliometricians that bibliometrics are not (yet) applicable to the SSH
  - Different publication patterns (Hicks, 2004)
  - Different citation practices (van Leeuwen, 2006)
  - Lack of coverage in data bases (van Leeuwen, 2013)
  - Language issues (Nederhof, 2005)
  - US over-covered (60%) UK over-covered (20%); not only English-bias (70% in English) but especially nationality (Chi, 2014)
- Further problems:
  - No linear progress of research (cf. Price's Law; Lack, 2008)
  - Interaction with public – non-scholarly publications are important
  - WoS and Scopus exhibit citation-matching problems for non-hard science publications → Loss of citations
  - Coverage does not solve the problem, altmetrics do not help (Hammarfelt, 2017)

Coverage issues (internal)

Black: hard sciences

Blue: engineering/applied

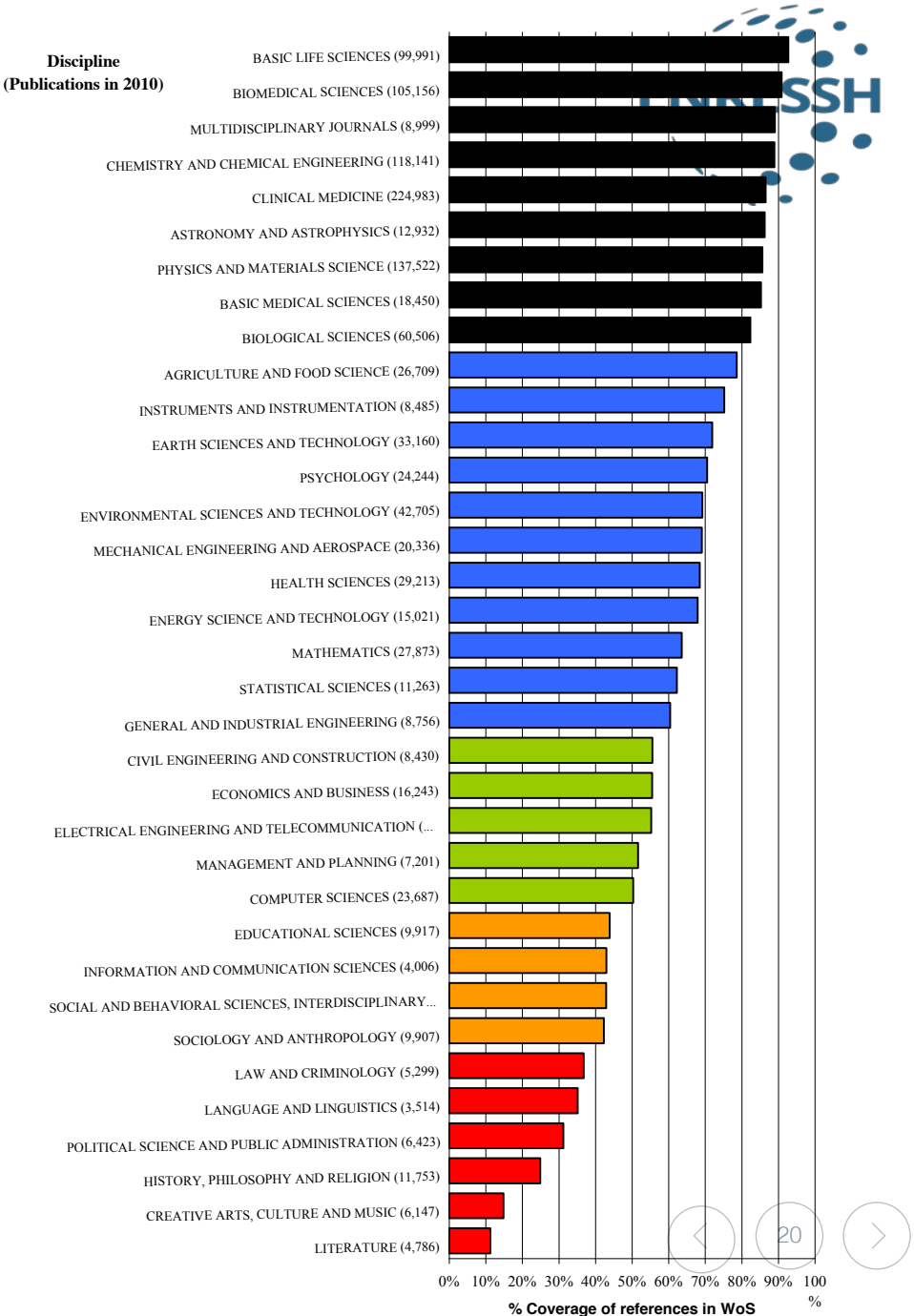
Green: economics

Orange: social sciences

Red: humanities

Source: figure 2 from van Leeuwen (2013)

Figure 2: Coverage of disciplinary output in WoS, 2010.



Evaluative bibliometrics: citations and quality

- Bibliometrics widely used in STEM to evaluate research
- This comes with assumptions
  - Citations as “currency of science” (Merton, 1962, personal communication to Garfield)
  - Citation as a predictor for quality (but: citations measure many things, Moed, 2005; Bornmann & Daniel, 2008b)
  - Coverage: the data base must include most important research adequately (80%-rule)
  - Linear progress of research
  - Citation practices are similar in subjects that are evaluated (but: van Leeuwen, 2006)
  - There is nothing else that is not correlated with citations that is important for the quality of research (but: Ochsner et al., 2012; Hug et al., 2013)

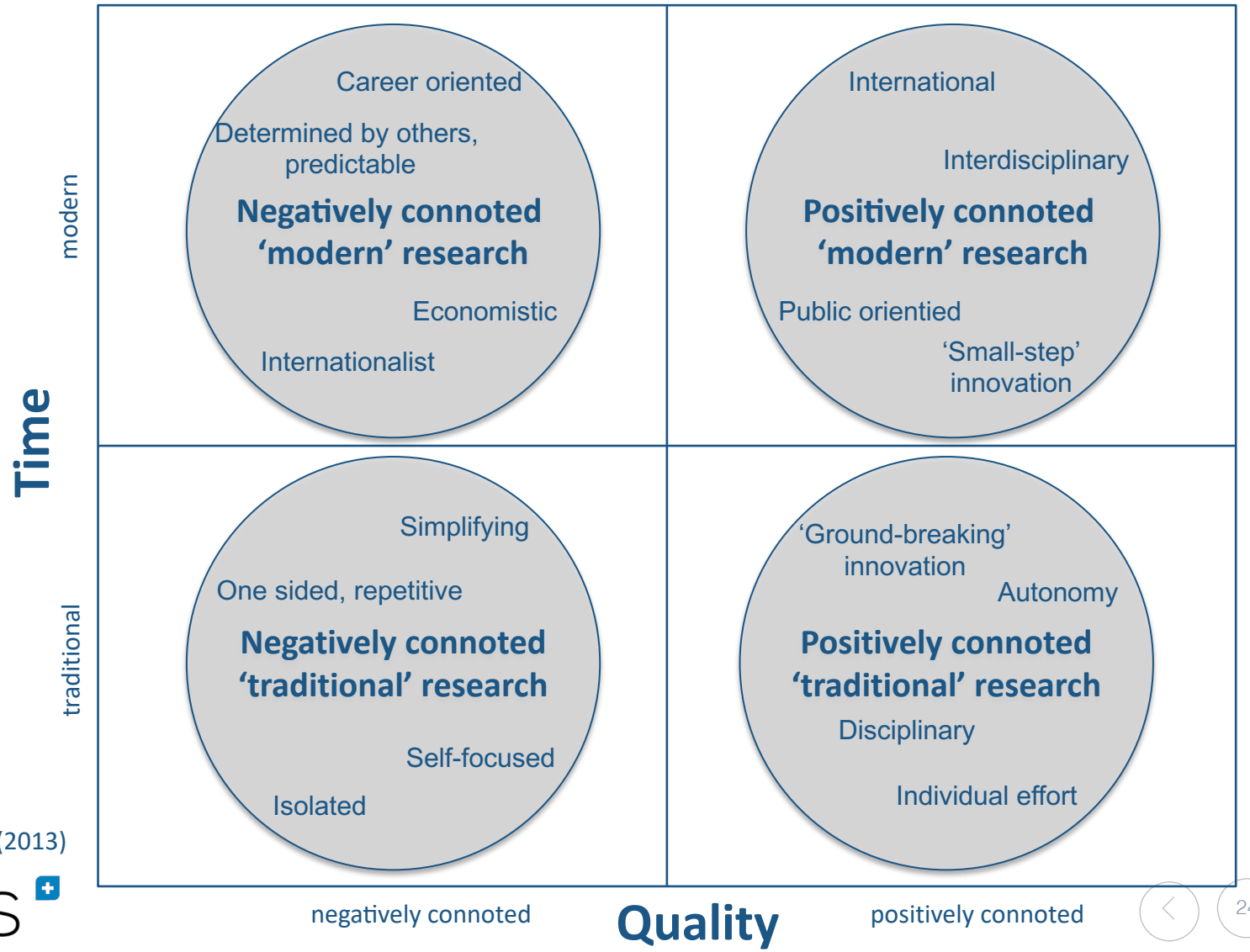
Remember Spotify? A Third Way to Go

- SSH are in Bibliometrics like Lithuania in Spotify: not covered
- What would you do if you want to interesting music that is not (yet) in the charts?
  - You ask your friend that plays in a band you like
  - You ask your friends who have the same taste of music
- Our approach: ask all scholars in a field what quality is
  - Different sub-fields
  - Non-mainstream
  - Young scholars and experienced scholars

How to Conceptualize a Latent Construct

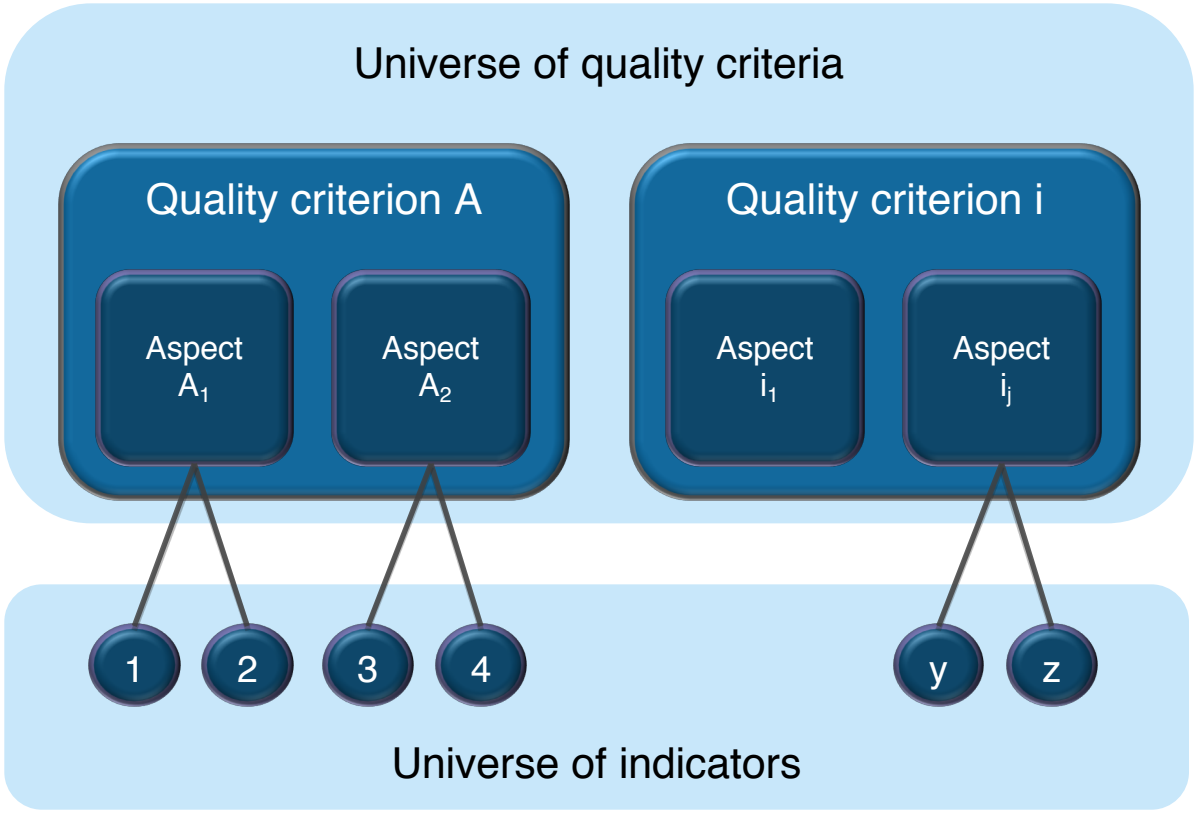
- Nothing was really known about what research quality is in the SSH
- We decided to start **from scratch**
- **Mixed methods** approach
  - First, qualitative inquiry on what we want to get a grip on
  - Then, conceptualise
  - Multiple rounds asking scholars using ratings

Notions of Quality



Source:
Ochsner et al. (2013)

Measurement Approach



Source: Hug et al. (2014)

Quality Criteria for Research in the Humanities

- 19 Quality Criteria defined by 70 aspects

1. Scholarly exchange
2. Innovation, originality
3. Productivity
4. Rigour
5. Fostering cultural memory
6. Recognition
7. Reflection, criticism
8. Continuity, continuation
9. Impact on research community
10. Relation to and impact on society
11. Variety of research
12. Connection to other research
13. Openness ideas and persons
14. Self-management, independence
15. Scholarship, erudition
16. Passion, enthusiasm
17. Vision of future research
18. Connection between research and teaching, scholarship of teaching
19. Relevance

Source: Hug et al. (2013)

Examples for aspects

- Scholarly exchange
  - Disciplinary exchange
  - International exchange
  - Interdisciplinary exchange
- Recognition
  - Insights are recognized by the research community
  - Insights are recognized by society
  - Reputation within research community
  - Reputation in society
  - Reputation at own university
- Variety of research
  - Contributing towards variety and diversity
  - Taking risks and working outside of mainstream

Examples for Indicators

- Criterion: Fostering cultural memory
  - Aspect: Documentation of aspects of the past
    - Number, weighting and duration of **documentation or preservation activities**
    - Number and weighting of **outputs reflecting** documentation or preservation activities
    - Number and weighting of **activities for the public** (e.g., guided tours, public lectures, readings, media appearances, performances)
    - Number and weighting of **outputs for the public** (e.g., popular books or articles, exhibitions, documentary films)

50% of the aspects cannot be measured by indicators

- Criterion: Fostering cultural memory
  - Aspect: Renewal of Interpretations of Aspects of the Past:
    - Only Peer-Review
- Criterion: Rigour
    - Only Peer-Review

What do commonly used indicators measure?

Table 1: Frequently used indicators and criteria they can potentially measure

Indicators	Criterion
Citations	Recognition; impact on research community; relevance
Prizes	Recognition; impact on research community; relevance
Third party funding	Recognition; impact on research community; relevance; relation to and impact on society
Collaborations	Scholarly exchange; recognition
Transfers to society and economy	Relation to and impact on society
Publications	Scholarly exchange; productivity
Board memberships	Scholarly exchange; recognition; impact on research community
Recruitment	Continuity, continuation

Source: Ochsner et al. (2012)

Quality Criteria for Research in the Humanities

- Valid *quantitative measures* for research quality?
  bold and italic: commonly used indicators

1. ***Scholarly exchange***
2. Innovation, originality
3. ***Productivity***
4. Rigour
5. Fostering cultural memory
6. ***Recognition***
7. Reflection, criticism
8. ***Continuity, continuation***
9. ***Impact on research***
   Community
10. ***Relation to and impact on society***
11. Variety of research
12. Connection to other research
13. Openness ideas and persons
14. Self-management, independence
15. Scholarship, erudition
16. Passion, enthusiasm
17. Vision of future research
18. Connection between research and teaching, scholarship of teaching
19. ***Relevance***

Source: Ochsner et al. (2012)

Quality Criteria for Research in the Humanities

- Valid *quantitative measures* for research quality?
  orange: consensus in three disciplines; blue: two disciplines;

1. Scholarly exchange
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3. Productivity
4. Rigour
5. Fostering cultural memory
6. Recognition
7. Reflection, criticism
8. Continuity, continuation
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  bold and italic: commonly used indicators

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6. ***Recognition***
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10. ***Relation to and impact on society***
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18. Connection between research and teaching, scholarship of teaching
19. ***Relevance***

Source: Ochsner et al. (2012)

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Exercise

- Look at the tables with the criteria and aspects
- Think about which ones are **valid** in your discipline
- Think about what is **missing** for your discipline

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Quality Criteria for Research in the Social Sciences

- Only small adaptations necessary
  - Criteria
    - Fostering Cultural Memory: less important in social sciences
    - Relation to society and impact on society are important and different
  - Aspects
    - Data and methods are different: more quantitative, several adaptations in the formulation of aspects
    - Language as an innovation is exchanged with method/data as an innovation
    - Criticism: politics and fake news/urban myths
    - Complexity: Humanities increase complexity, social sciences reduce it. But complexity of society is important to disclose

Results

1. ~~Scholarly exchange~~
2. Innovation, originality
3. Productivity
4. Rigour
5. Recognition
6. Reflection, criticism
7. Continuity, continuation
9. Impact on research community
9. Impact on society
10. ~~Relation to society~~
11. Variety of research
12. Connection to other research
13. Openness ideas and persons
14. Self-management, independence
15. Scholarship, erudition
16. Passion, enthusiasm
17. Vision of future research
18. Connection between research and teaching, scholarship of teaching
19. Relevance

Source: Ochsner & Dokmanović (2017)

Quality is Context-Dependent

- These criteria have been developed for the most general evaluation context:
  - Research Evaluation of a chair or professor regarding long-term research (7-10 years)
- Criteria are different in other contexts
  - See e.g. Ochsner et al. (2017) for grant evaluation for young researchers
  - As seen: humanities and social sciences or disciplines in general

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PART II: How to Conduct Good Research

- Practical Implications: So what?!
- Conduct a research project
  - Project Plan
  - Conducting Research
  - Dissemination
  - Writing/Presenting

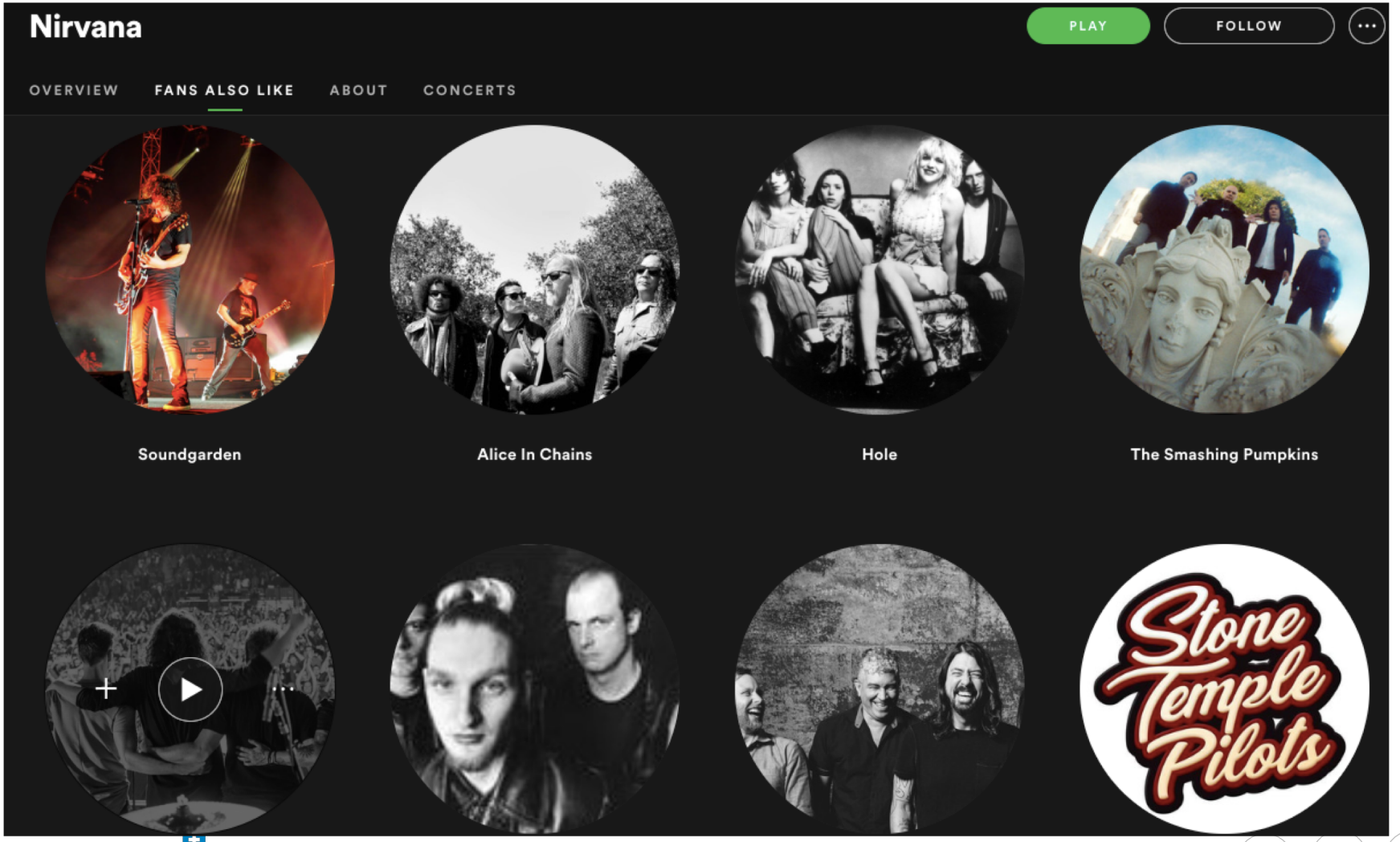
Project Plan

- Passion
  - You need to have passion for your project, you spend a lot of time and energy in it
  - No passion, less innovation, rigour because you‘re not ready to go the extra mile
  - You need to convince (professor, readers, public)
- Relevance
  - Is the question important?
  - Why do you want to do the research
  - Remember: If you know the relevance, you can convince others
- Connection to other research
  - What has already been done?
  - Can you connect? Or disconnect (i.e. break with ideas)?
- Reflection, Criticism
  - Can you explain something in society (complexity)? Can you criticise?

Conducting Research

- Innovation, Originality
  - New approach? What is the original part of your research?
- Rigour
  - Keep the standards, reflect on all the aspects of rigour during your resaerch process
- Erudition, Scholarship
  - Collect data, literature, news papers, popular beliefs
  - Go beyond your own discipline
- Connect to other research
  - Read, read, read. Synthesize and find a new aspect to what you read (your own way of thinking)
  - Establish structures of literature, group it, snowballing
  - And....

Remember Spotify? What is the Use of the Indicators?



The Beatles

PLAY FOLLOW ···

OVERVIEW FANS ALSO LIKE ABOUT

John Lennon

George Harrison

Paul McCartney

The Beach Boys

Wolfgang Amadeus Mozart

PLAY FOLLOW ...

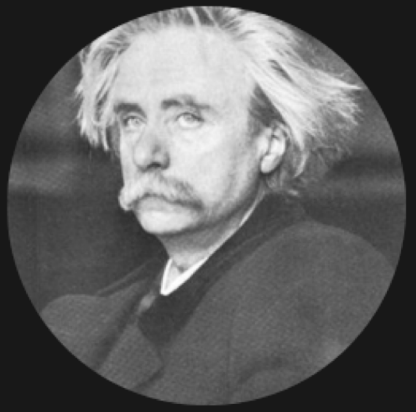
OVERVIEW FANS ALSO LIKE ABOUT

Discover more artists—based on what fans play on Spotify.

Frédéric Chopin

Ludwig van Beethoven

Antonín Dvořák



Edvard Grieg

Vytautas Kernagis

PLAY FOLLOW

OVERVIEW FANS ALSO LIKE ABOUT CONCERTS

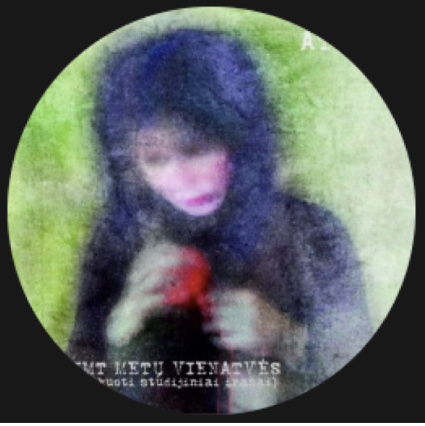
Andrius Mamontovas

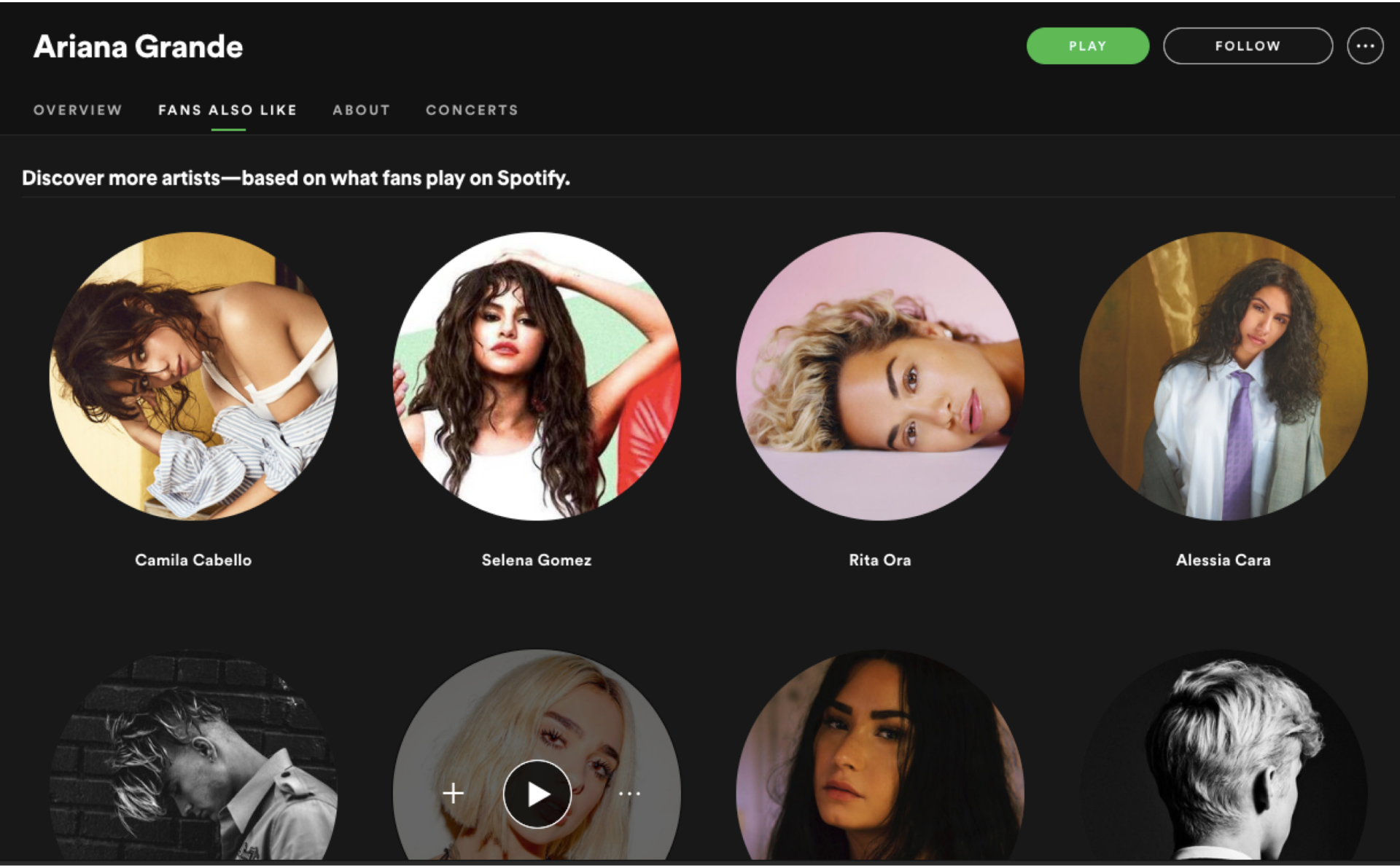
Hiperbole

Jurga

Jurga

G&G Sindikatas




Ariana Grande
PLAY
FOLLOW
OVERVIEW
FANS ALSO LIKE
ABOUT
CONCERTS
Discover more artists—based on what fans play on Spotify.
Camila Cabello
Selena Gomez
Rita Ora
Alessia Cara

Bibliometrics as a Tool

- Bibliometrics was actually established for literature retrieval
- That‘s what it is excellent for
- Check citations (who cites an article I (dis)like?)
- Network analysis (who cites whom)
- Journals: read content of specific journals, special issues etc.
- Use Research Gate etc. to contact authors, ask questions etc.

Dissemination

- Scholarly Exchange
  - International
  - Disciplinary
  - Interdisciplinary
- Impact on Society
  - Make your findings understandable to non-academic audience
- Relation to Society
  - Effect on culture/society

Dissemination

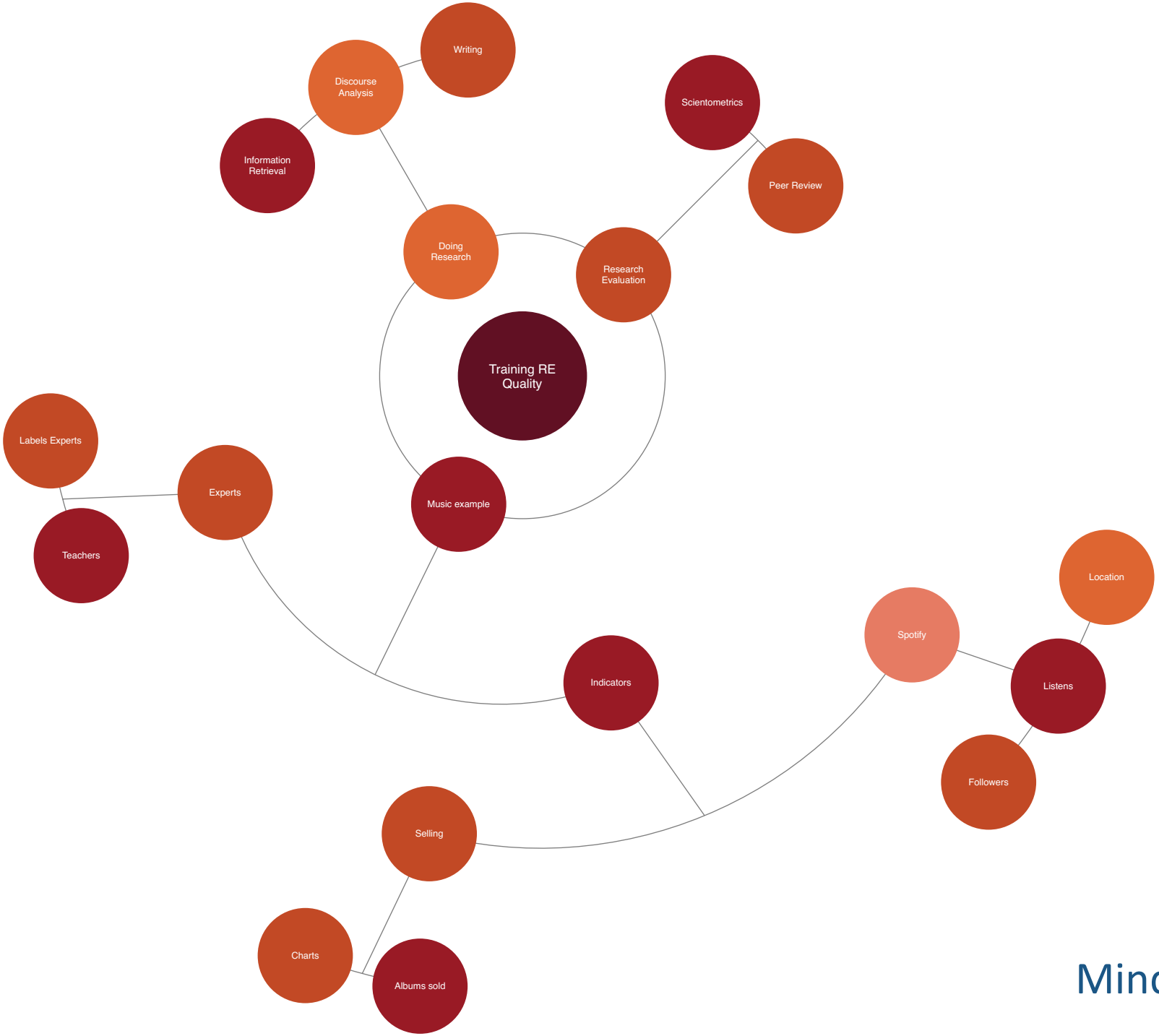
- Think early in the process of dissemination
  - Relevant to society? To which part (Stakeholders)
  - Relevant to which academics?
- Think of outputs and combinations of it
  - Journal article? Book? Both?
  - Which journal publisher?
    - Who should read it?
  - Non-academic output
  - Qualification output (Thesis)?
  - Presentations
    - Which conferences/workshops?
- Adapt content, style, form to your audience!
  - Know from the start what you will do, don‘t mix-up

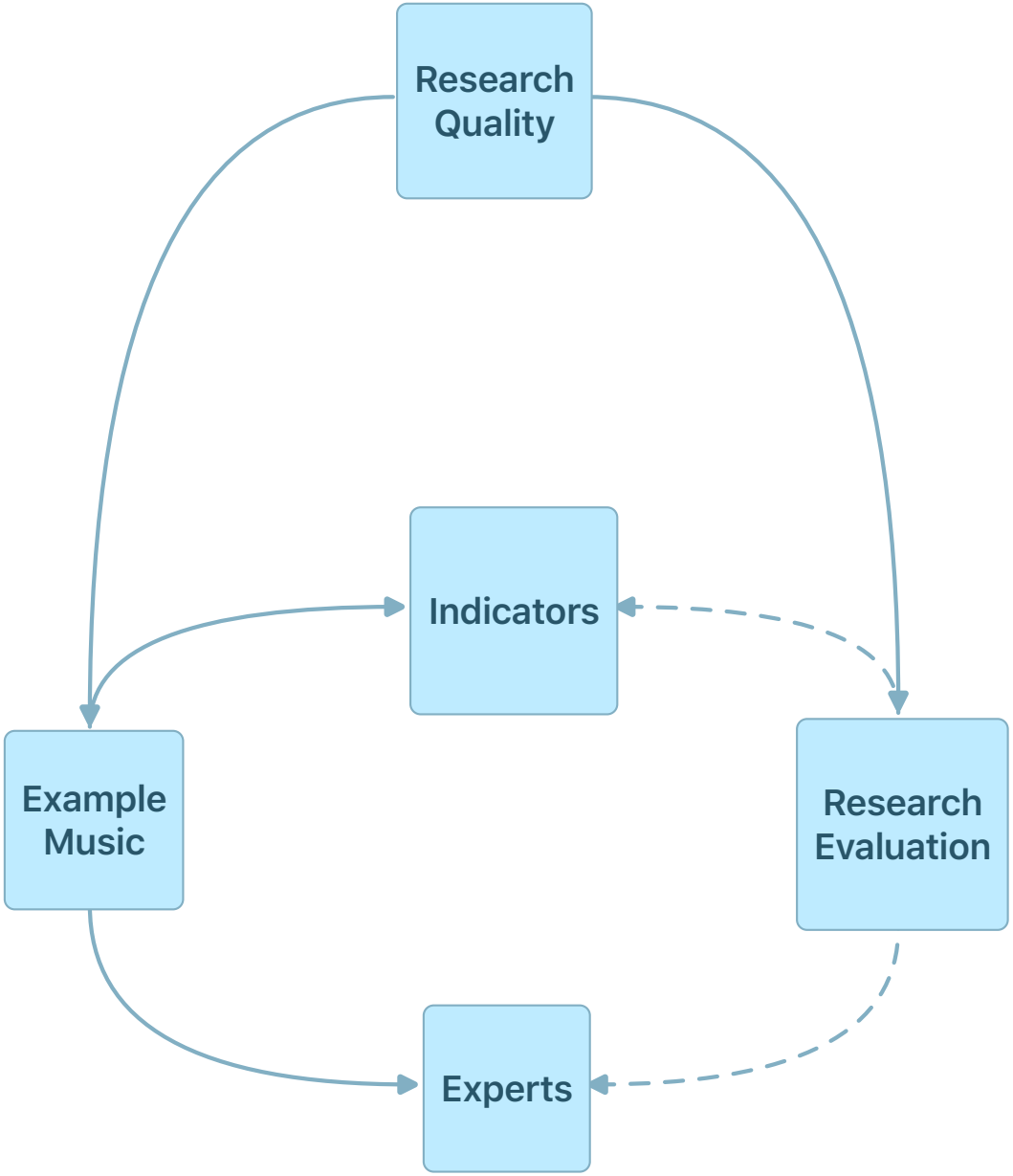
Writing

- Originality
  - Produce new findings and interpretations
- Rigour
  - Stringent, convincing arguments
  - Use clear and understandable language
  - Texts have a clear structure
  - Reflect on the method used
  - Explain generalizability
- Scholarship
  - Make use of your knowledge of material
  - Make use of insights from research
- Connect to other research

Writing

- One of the most important processes of your research project
- Start to write early in the process:
  - Writing is thinking, but more strict
  - Structure your thoughts, check your arguments
  - Use mind maps, flow charts etc. → e.g. marginnotes or liquidtext
- Draft, draft, draft
  - Write different versions of your argumentation
  - Question yourself


Writing
Discourse Analysis
Information Retrieval
Scientometrics
Peer Review
Doing Research
Research Evaluation
Training RE Quality
Labels Experts
Experts
Teachers
Music example
Location
Spotify
Indicators
Listens
Followers
Selling
Charts
Albums sold


Research Quality
Indicators
Example Music
Research Evaluation
Experts

Writing

- Exercise (do it every time):
  - Write three sentences about your project (a)
    - First: purpose
    - Second: How
    - Third: Implications, relevance
  - Write a paragraph or two for a researcher/student of your field (b)
  - Write a paragraph or two explaining your project to a non-academic friend (c)

- Bravo: You've got your first (a) and last paragraphs (b and c)!
  - Of course, these will change during the project…

Writing

- Don‘ts
  - Write down your thinking or research process as it happened
    - It‘s not what the reader needs to know
  - Cite all the texts you liked
    - There will be other occasions, it only confuses the reader
- Dos
  - Write down what is needed to understand your argument, method, conclusions
  - Clean out everything that is not necessary
  - Be clear: don‘t be afraid of simple structures
  - Keep your logic (Nirvana-Beatles-Mozart-Kernagis-Ariana Grande)
  - Think of your audience (style, complexity, content)

Last but not Least

- Learn
- Never give up, back-check
- Let others read your texts
- Feedback:
  - Sometimes you do not agree with critique (OK, almost always)
  - Don‘t dismiss it. Find the reason for it
  - Most of the time, a reader does not understand
    - That‘s your fault, you were not clear
    - Search for the problem and fix it

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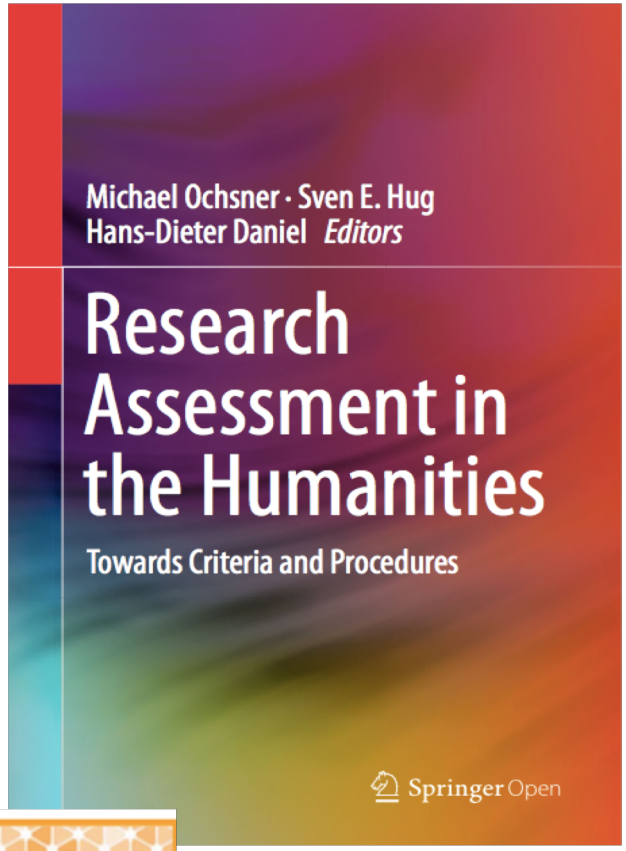


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The future of research assessment in the humanities: bottom-up assessment procedures

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Useful Tools

- Mind Mapping Tools
  - Mindly (http://www.mindlyapp.com) free for iOS/Android
  - Ideament (http://www.nosleep.net) free for iOS/Android
  - Simplemind+ (https://simplemind.eu) - now paid
  - And many more
- Schreiben für peer-reviewed Journals
  - Abby Day (2007): How to get research published in journals (2nd edition). Routledge. Link GoogleBooks
- ERIH PLUS (List of scientific journals in the SSH)
  - https://dbh.nsd.uib.no/publiseringskanaler/erihplus/