Schwerpunktprogramm 1505 „MEDIATISIERTE WELTEN“

Survey Musik und Medien

Technische Universität Berlin

Media Repertoire Research 2.0

From interpreting parametrically clustered media usage data to identifying and understanding ideal-types of theme-related habitual cross-media practice

Steffen Lepa

Anne-Kathrin Hoklas

Audio Communication Group
Technische Universität Berlin
Germany

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audiokommunikation

Digitalization as Challenge for Media Audience Research

- **Diffusion of multifunctional mobile digital gadgets:**
  smartphones, tablet-PCs, notebooks, multimedia players, eBook readers, game consoles

- **Challenges of digitalization for Media Audience Research (Lepa & Hoklas 2015):**
  - ***Trans-Media Use:*** Identical content is used cross-medial and cross-situational
  - ***Coupled Media Use:*** People freely combine texts, genres, software, hardware, platforms
  - ***Non-Exhaustible Use:*** How can we observe usage alongside the lifecycle of digital files?

- **Chances of digitalization for Media Audience Research (Lepa, Krotz & Hoklas 2014):**
  - Enables complex forms of data acquisition & analysis across space & time (**„Big Data Mining"**)
  - Foundation of new transdisciplinary endeavor of **„Digital Social Science"** (MC and IT)
  - Analysis of **habitual/situational usage patterns** gives rise to **CR abductive reasoning**
  - **McLuhan (1969):** Looking at patterns is a way of dealing with complexity
    "Faced with information overload, we have no alternative but pattern recognition."

The Evolution of the Media Repertoire Approach

- **TV-channel repertoires**
  - Survey on Cable TV Channel Repertoires (Heeter 1985) -→ until ~2000

- **People "create subsets of all available options and consume content from this smaller set" (Taneja et al. 2012)**

- **I. General cross-media repertoires** – basic research on overall cross-media use
  - Cluster Analysis / PCA of *Dutch self-report media time use* (van Rees & van Eijck 2003)
  - PCA / CFA of *US-american directly observed cross-media behavior* (Taneja et al. 2012)
  - LCA (+ Interviews) of *survey data on cross-media use from Belgian secondary schools* (Courtois et al. 2012)
  - PCA of *Korean TV peoplemeter and survey data on cross-media use* (Kim 2014)
  - LCA / PCA of survey data on *9 European countries' cross-media use* (Helles et al. 2015; Hasebrink et al. 2015)

- **II. Theme-/Context-specific cross-media repertoires** – research on new cross-media publics
  - Cluster Analysis (+ Int.) of survey data on *German Information Repertoires* (Hasebrink & Popp 2006)
  - Q-Sort / Q-Factor „Bottom-Up Analysis" of *Danish News Consumer Types* (Schrøder & Kobbernagel, 2010)
  - PCA of peoplemeter and survey data on *Chinese News Media Repertoires* (Yuan 2011)
  - Latent Class Analysis of survey data on *German Audio Repertoires* (Lepa et al. 2014, 2015)

- **A unified theory for explaining and understanding cross-media repertoires?**
  - *Micro:* Active Audience Theory (Uses-and-Gratifications, Appropriation Theory), "Socio-demographics"
  - *Macro:* Structural Theories (Audience Avail., Program Strategies, Legislation, Diffusion, Medium Theory)
  - ***Meso:* Habitus Theory / Lifestyle Theory → Hasebrink und Domeyer (2012)**

Repertoire Clusters Indicating Media Practices / Habitus

- **Repertoire clusters as indicators of meaningful practices (Hasebrink & Domeyer 2012)**
  - media behavior/attitudes on **common layer of abstraction** (texts, genres, channels, devices)
  - Parametrical **cluster analysis and follow up regression on socio-demographic covariates**
  - Interpret **clusters as outcome** of **type of communicative practice / media lifestyle** in focus
  - **Validate & enrich interpretations with qualitative analyses** with representative type members
  - No single "repertoire theory", **open workbench** for researchers' case-specific theory building
  - Affinities to Habitus and Milieu Theory → **Clusters empirical indicators for "media habitus"**

- **Our methodological concerns with the approach:**
  - Numerous problems with Cluster Analysis in terms of producing **method artifacts**
  - In which ways may clusters (mean-types) and informants (real-types) **"represent"** each other?
  - How to reconstruct ***embodied habitual practice*** from discourse / card sorting / diaries?

→ ***Two proposals for "updates" of the "Hasebrink Approach" to media repertoires***

AN UPDATE
FOR THE TYPOLOGICAL STEP

Methodological Concerns with PCA, CFA & Clustering

- **Concerns with Principal Component Analysis / Common Factor Analysis**
  - Assumption of metric measurement / normal distribution of error
  - Variance-based explanatory approach: Covariance of Measure = Related Behavior
  - Orthogonality is forced with Varimax-PCA
  - Simple Structure is forced with CFA
  - Often needed anyways: Arbitrary posterior clustering to identify „types" for cross-tabs / follow-up

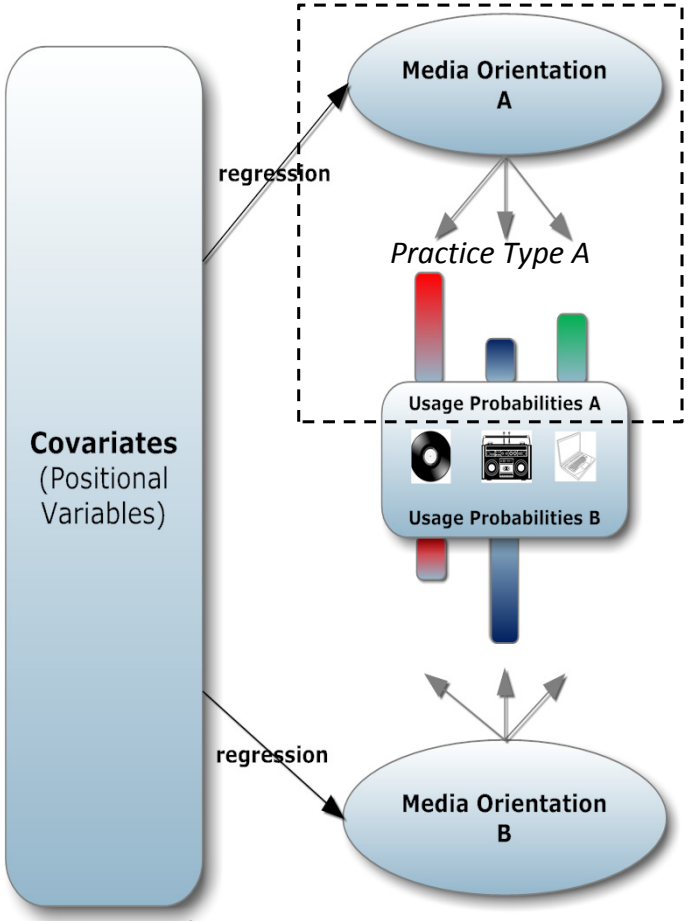
- **Concerns with (Hierarchical / K-Means) Parametric Cluster Analysis**
  - "the time-use data for most media are zero inflated and therefore violate the assumptions of many common clustering techniques" (Helles et al. 2015: 303)
  - Problems with comparability of measurement scales and with fuzzy estimates in survey studies
  - Each indicator variable receives same weight and is assumed to be a fully independent dimension of a "feature space" → selection/coding of variables extremely critical for results
  - „fails to indicate how many clusters are needed to adequately replicate the data structure" (van Rees & van Eijck 2003: 474)
  - cluster centroids are mean-types, not ideal-types (Hagenaars & Halman 1989)

- **Theoretical Concern: *What are we really looking for?***
  - *Factors:* Differing intensities of (independent) 'correlational styles' of cross-media behavior
  - *Clusters:* Mean-Types of cross-media behavior patterns and their societal prevalences
  - *Latent Classes:* Ideal-Types of cross-media behavior patterns and their societal prevalences

Update for the Typological Step: Latent Class Analysis

- **Theme-specific media repertoires as empirical indicators for socially stratified habitual practice types ('Media Orientations')**

- **Latent Class Analysis with Covariates (Collins & Lanza 2010)**
  - does **not require metric measurement** or **equal-weight** indicators
  - does **not assume an orthogonal**, n-dimensional feature space
  - allows for **meaningful inclusion of theoretical assumptions**
  - allows for **model fit testing / gives information criteria**
  - Results in **class measurement model** applicable to new datasets
  - allows to calculate **standard errors** for model parameters
  - class membership is ***latent***
    (→indicators are error-laden, merely probabilistic causal outcome)
  - class membership is ***fuzzy***
    (→classes are ideal-types, everyone partial member of each class)



→ **Well-suited for Applied Social Research**
(real-world problems in social sciences often non-parametric, complex and fuzzy)

→ **Compatible to Critical Realist Understanding of repertoires as empirical indicators for actual practice**
(abducted types are non-observable ideal-types most probably causing the empirical responses)

→ **Good Interface to Qualitative Research**
(case-configuration-based causal logics and class membership probabilities)

Project „Survey Musik und Medien“:

- How do Germans listen to music nowadays?
- Why and how do they combine different audio technologies in everyday life?
- Are there ‘generational turnovers’ in patterns of everyday music listening?

DFG Deutsche Forschungsgemeinschaft
Schwerpunktprogramm 1505 „MEDIATISIERTE WELTEN“

→ *Repres. CATI Survey (GER 14+) with 44 ordinal items on Audio Media Use in 2012*

Dr. Steffen Lepa
Media Studies & Communication Science
Mixed Methods

Prof. Stefan Weinzierl
Audio Communication
Empirical Musicology

Anne-Kathrin Hoklas M.A.
Sociology
German Studies

Prof. Alexander Geimer
Sociology
Qualitative Research Methods

Martin Guljamow
Educational Science
Logistics & Counseling

Hannah Kropla
Urban Sociology
Qualitative Research Methods

Matthias Ruhland
Media Psychology
Website Administration

Marc Voigt
Technical Support
Server Administration

LCA with Covariates

- **6-class solution exhibits best model fit**
- strong correlation between birth cohorts and pattern membership

Number of classes	Entropy	AIC	BIC	BIC_{adj}	calc. time (hh:mm:ss)
1	-	192714.846	193779.018	193175.378	00:01:11
2	0.936	131829.104	133845.429	132701.689	00:03:46
3	0.910	129618.937	132665.828	130937.510	12:18:18
4	0.907	128260.302	132337.759	130024.863	40:33:47
5	0.912	127371.044	132479.067	129581.594	117:09:41
6	**0.925**	**126586.617**	**132725.206**	**129243.154**	**299:03:41**
7	0.924	126241.590	133371.539	129327.149	664:28:38
8	0.926	126052.391	134173.699	129566.970	743:15:02

Audio Sources used in 2012 by Audio Repertoire Class

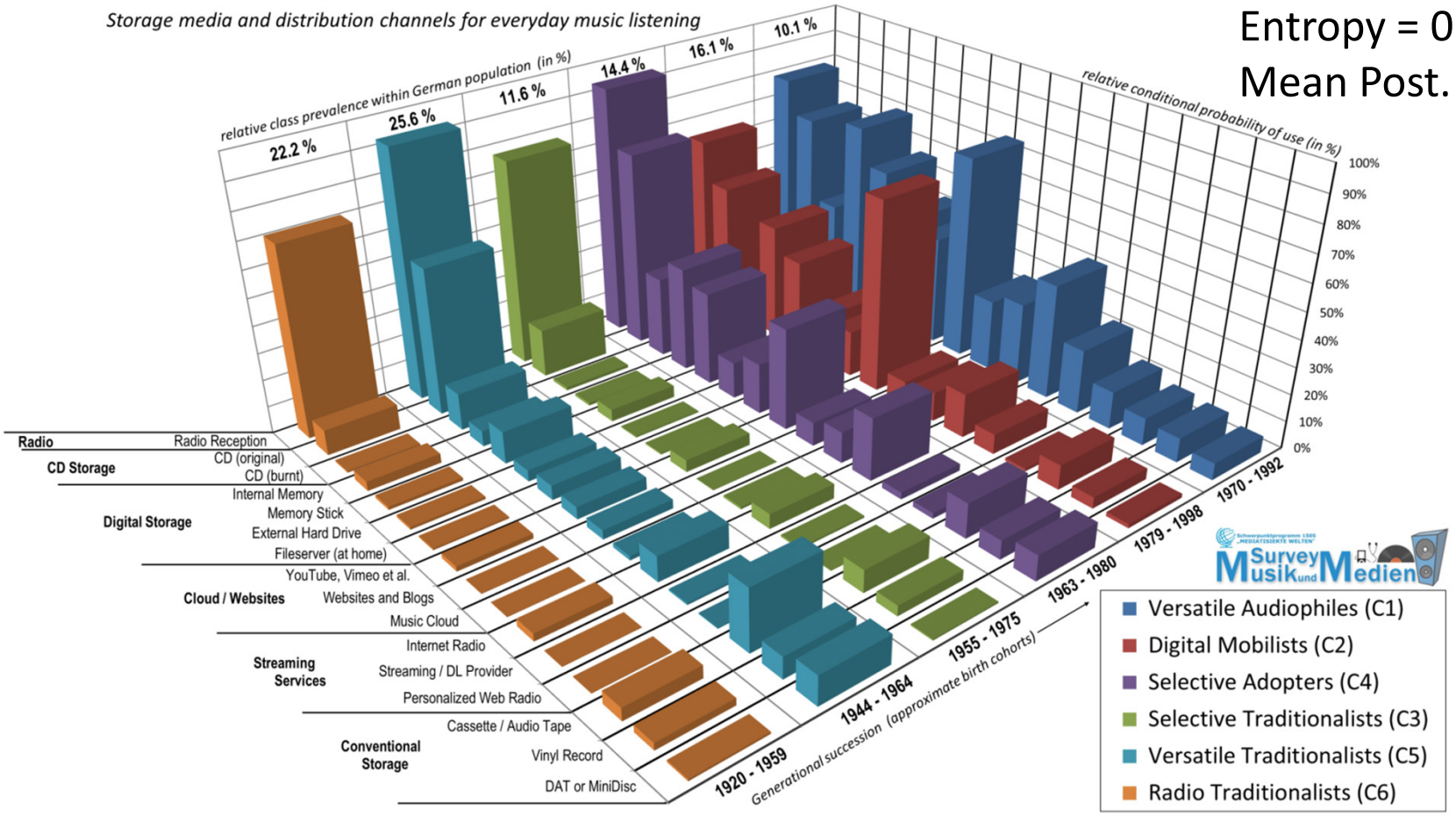
(Over-14 German population, n=2000)

'at least once a week'

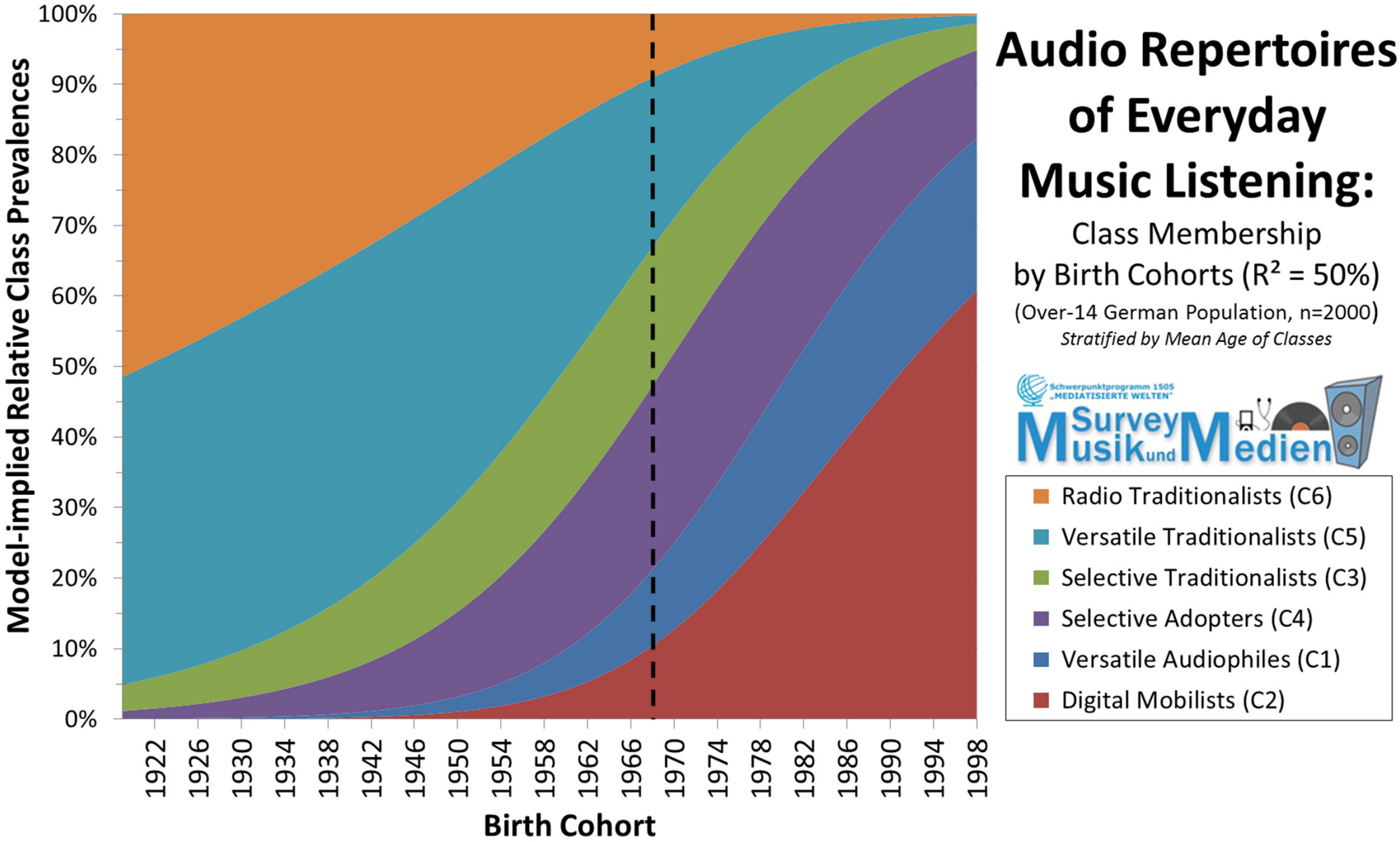
Storage media and distribution channels for everyday music listening

Entropy = 0.925

Mean Post. Prob = 0.950

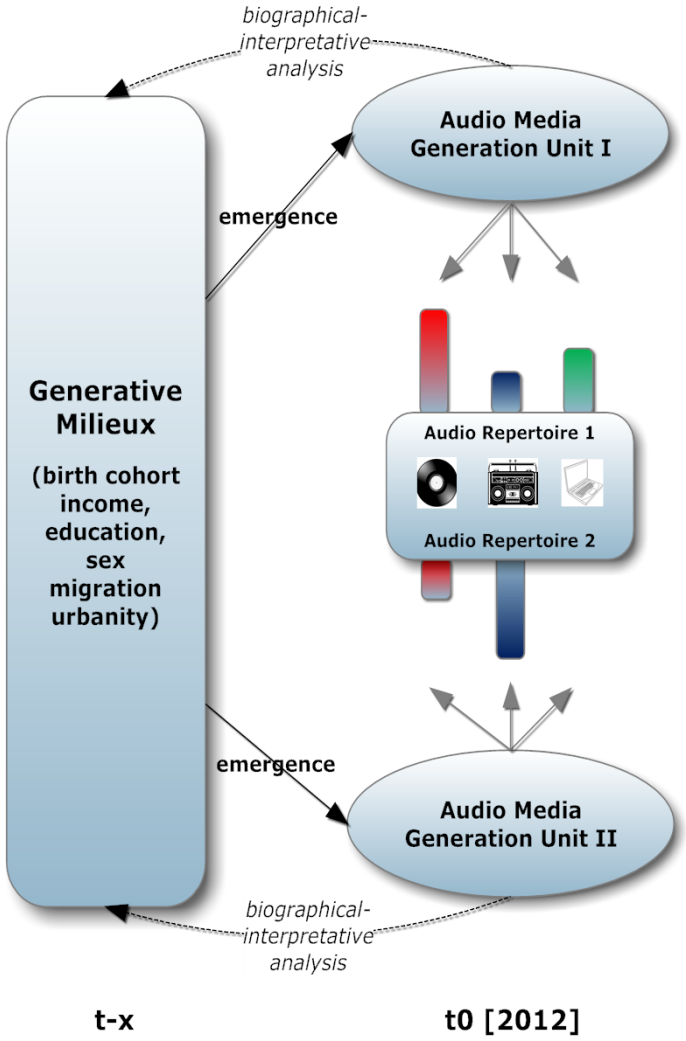


Model-Implied Class Prevalences by Birth Cohorts



Results of Multinomial Regression on Covariates

model term	- 2LL	X^2	df	p	R^2	ΔR^2
intercept	5268.734	128.755	5	< 0.001	-	-
birth cohort	6178.221	1038.241	5	< 0.001	50.1 %	**50.1 %**
HH income	5222.471	82.491	5	< 0.001	54.2 %	**4.1 %**
education	5225.963	85.983	5	< 0.001	56.2 %	**2.0 %**
sex	5223.121	83.142	5	< 0.001	58.1 %	**1.9 %**
migration index	5181.203	41.224	5	< 0.001	59.0 %	**0.9 %**
urbanity (BIK)	5158.570	18.591	5	0.002	59.4 %	**0.4 %**
1+ child in HH	5149.775	9.796	5	0.081	59.7 %	**0.3 %**



More info on study results in Lepa, Hoklas & Weinzierl (2014), Lepa & Hoklas (2015)

AN UPDATE
FOR THE INTERPRETIVE STEP

Update for the Interpretive Step: Documentary Method

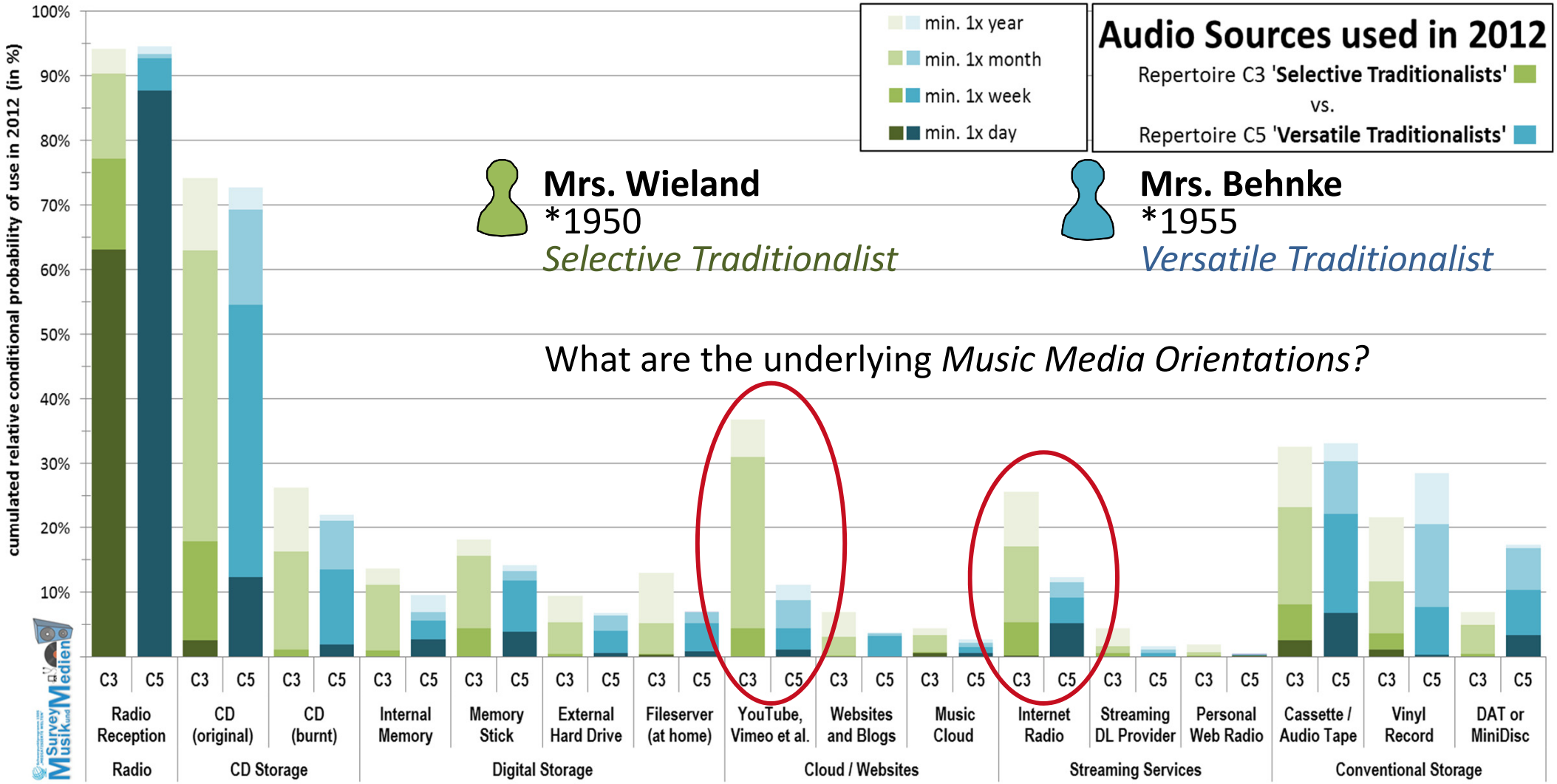
- **How to understand the *modus operandi* of identified habitual media practice types?**

- **Qualitative Follow-Up Study: 39 biographic-episodic guided household-interviews with type members from overall Germany**
  - childhood and youth experiences with music and audio technologies
  - nowadays attitudes towards music and audio technologies
  - nowadays situations of everyday music listening
  - habitual practices of everyday music listening ('ethnographic walk')

- **Documentary Method (Bohnsack et al. 2010, Nohl 2010) allows access to implicit regularity of experiences and habitual orientations**
  - distinguishes between two levels of meaning**:** ***communicative knowledge*** (‚common sense') and procedural-implicit ***conjunctive knowledge***
  - involves a consistently **comparative sequential analysis**

1. **Reconstruction of informants' music media orientations:** *modus operandi* with audio technologies employed for music listening
2. **Abductive theory building:** regarding *genesis of orientations* in terms of generational and social location

Example Outset: Audio Repertoire Class Profiles C3 vs. C5



Example Part 1: Shared Communicative Knowledge

Both women regard themselves as 'competent users' of new audio media technologies:

*I: I'd like to know how you relate to, well, the opinion that is sometimes heard, that older people tend to **struggle with new technologies**. Obviously, you do not.. but how..*
*Mrs. Wieland: (interrupting) **No, not at all**!*
I: How do you see that in general and especially regarding yourself?
Mrs. Wieland: Yes, well, I know, ah.. ah.. ah.. that not anybody uses them on a natural basis, but for me they are just fantastic!

C3: Selective Traditionalist (more digital audio – narrow r.)

*I: Some people say that women have **difficulties with new technologies**, do you?*
*Mrs. Behnke**: Not at all**. I am sorry. I have no problems with using new technologies. Well pfft: It's comprehensible. No, actually not. Actually, I have to say I have.. **it is not that I do not get along with them**! Well, regarding my mother its 'yes', because she is not interested in them. And well, regarding the girls, say, the younger generation, they are even more competent.*

C5: Versatile Traditionalist (less digital audio – broad r.)

→ **'what content' of verbal material may be interpreted as *communicative knowledge***
→ common shared discursive horizons does not necessarily imply shared practice

Example Part 2: Diverging Conjunctive Knowledge

	Mrs. Behnke *C5: Versatile Traditionalist* (less digital audio, broader repertoire) 	**Mrs. Wieland** *C3: Selective Traditionalist* (more digital audio, narrow repertoire) 
use of MP3 players	depicts MP3 player as 'resistive' technology: *"it was too fiddly for me. I never.. what I was planning to listen to never came out of it."*	mentions a specific technological affordance that made MP3 Player appear as useful devices: "*one was already able to synchronize that with iTunes somehow"*
technology introduced by children	expectation that her younger family members provide and support her with access to digital music devices: "*And I said: I appreciate that. But now, make it work!"*	her daughter originally gifted her with the iPad but she is aiming at self-directed technology use: "*It was really fantastic: We initially started – well I started to get familiarized with it immediately.*"
use of internet radio	refusal of music distributed online: "*I have my radio in the car and yeah we have a transistor radio in the office. Over the internet no, funnily enough, I can't get used to it.*"	narration on her first contagion with internet radio app documents openness and curiosity towards new technologies' affordances: "*And then I started to tune in ah, ah, and around everywhere and tried everything at least once."*

→ systematic comparison and reconstruction of *conjunctive knowledge* hinted to **diverging orientations regarding music media** that might explain differential habitual use

→ Indicated by the use of *(non-)insider knowledge, metaphors, and dense depictions*

Example Part 3: Abducting Ontogenetic Explanation

	Mrs. Behnke *C5: Versatile Traditionalist* (less digital audio, broader repertoire) 	**Mrs. Wieland** *C3: Selective Traditionalist* (more digital audio, narrow repertoire) 
social location during formative years	grew up in a educated leftist middle class milieu	stems from a rural lower educated peasant family and recollects having to live with her parents '*very, very frugal*', but reached a college degree (social 'climber')
audio technological environment socialized with	comparatively 'rich': narrates that she took her parents record changer and vinyls to 'kiddie discos': "*And there, we played the disc jockey*"	narrates how she attempted to receive radio stations playing popular music with her kitchen radio in her youth, the only audio device her parents could afford
nowadays 'typical' situations of music listening	dense depiction on selecting and switching radio stations in a playful manner in the car in front of an 'audience', her family ('DJ habitus')	dense depiction about listening to her favorite web radio station with the iPad and headphones while sitting relaxed on the sofa and knitting

→ differences in music media orientations may be traced backed to **differences in social location during formative years** of both women not visible in measured variables

→ initial **socio-theoretical explanation of how and why the two media generation units came into existence:** might explain higher adaptability to new audio technologies by *Selective Traditionalists* who exhibit at the same time a ‚narrow' repertoire

SUMMARY & CONCLUSION

Summary and Conclusion

- **Repertoire classes = ideal-typic outcome of theme-rel. (habitual) cross-media practice**

- **Benefits of Latent Class Analysis with Covariates for typological analysis**
  - Introduce reasonable theoretical assumptions on types instead of various method artifacts
  - Classification model transferrable to new datasets (Lepa & Seifert 2015, forthcoming)
  - Case based explanatory logics, also helps with finding suitable follow-up interview candidates

- **Benefits of Documentary Method for interpretive analysis of repertoire classes**
  - Separation of practical knowledge from identity related self-presentation
  - Helps with habitus reconstruction and deriving ontogenetic explanations

- **Outlook:**
  - ***Further Improvement:***
    Classification of Experience Sampling (ESM) data or digital real-time usage data (API)
  - ***Interesting Variant:***
    Typology of situated Media Dispositifs (situationist approach to media practice analysis)

Publications

- Lepa, S. & Seifert, M. (in press). Embodied Listening Modes as part of Habitual Music Media Orientations: Relating young adults' audio technology use with their Music Socialization and Taste Preferences. *Networking Knowledge: Journal of the MeCCSA-PGN*.
- Lepa, S., Hoklas, A.-K., Egermann, H., & Weinzierl, S. (2015). Sound, Materiality and Embodiment: Challenges for the Concept of 'Musical Expertise' in the Age of Digital Mediatization. *Convergence: The International Journal of Research into New Media Technologies*, 21(3), Online First Article.
- Lepa, S., & Hoklas, A.-K. (2015). How Do People Really Listen to Music Today? Conventionalities and Major Turnovers in German Audio Repertoires. *Information, Communication & Society,* Online First Article.
- Lepa, S., Hoklas, A.-K., & Weinzierl, S. (2014). Discovering and interpreting audio media generation units: A typological-praxeological approach to the mediatization of everyday music listening. *Participations - Journal of Audience & Reception Studies*, *11*(2), 207–238.
- Lepa, S., Krotz, F., & Hoklas, A.-K. (2014). Vom ‚Medium' zum ‚Mediendispositiv': Metatheoretische Überlegungen zur Integration von Situations- und Diskursperspektive bei der empirischen Analyse mediatisierter sozialer Welten. In F. Krotz, C. Despotovic, & M. Kruse (Eds.), Die Mediatisierung sozialer Welten: Synergien empirischer Forschung (pp. 115–141). Wiesbaden: VS - Verlag für Sozialwissenschaften.

More data, analyses and interpretations at:

http://www.musikundmedien.org

Thank you for your patience!

steffen.lepa@tu-berlin.de

anne-kathrin.hoklas@tu-berlin.de