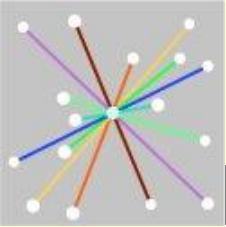




Katrin Müller, Jan-Helge Jacobs, Tina Mengel

Cologne University of Applied Sciences,  
Institute of Information Management

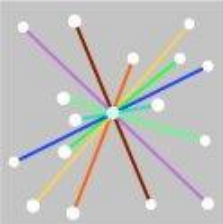
# Benefits of the CrissCross project for conceptual interoperability and retrieval



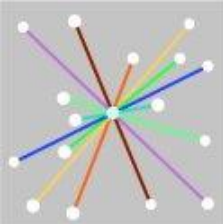
## CrissCross – Overview

- The Project
- DDC
- SWD
- Mapping Methods
- Retrieval Scenarios
- Perspectives

Benefits of the CrissCross project for conceptual interoperability and retrieval

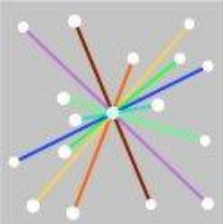


- Aim:  
*... creation of a thesaurus-based, user-friendly research vocabulary that facilitates search in heterogeneously indexed collections by mapping topical headings of the German subject headings authority file Schlagwortnormdatei (SWD) and the Dewey Decimal Classification (DDC)*
- Duration: 2006 – 2010
- Conducted by:  
German National Library  
Cologne University of Applied Sciences
- Financially supported by:  
German Research Foundation



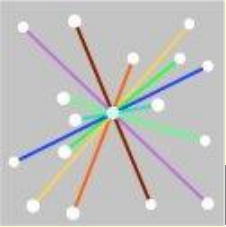
## Dewey Decimal Classification (DDC)

- most widely used universal classification system
- used by 200,000 libraries in over 135 countries
- translated into more than 30 languages
- since 2006 used by the German National Library (DNB) for subject indexing
- contains about 50,000 classes
- structured by disciplines (e.g. religion, social sciences, technology, ...)



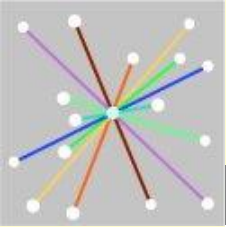
## German subject headings authority file Schlagwortnormdatei (SWD)

- universal indexing language
- contains 550,000 headings
- categories: geographical names, topical headings, time, form, ...
- structured in 37 subject groups
- types of relations: equivalent, hierarchical and associative

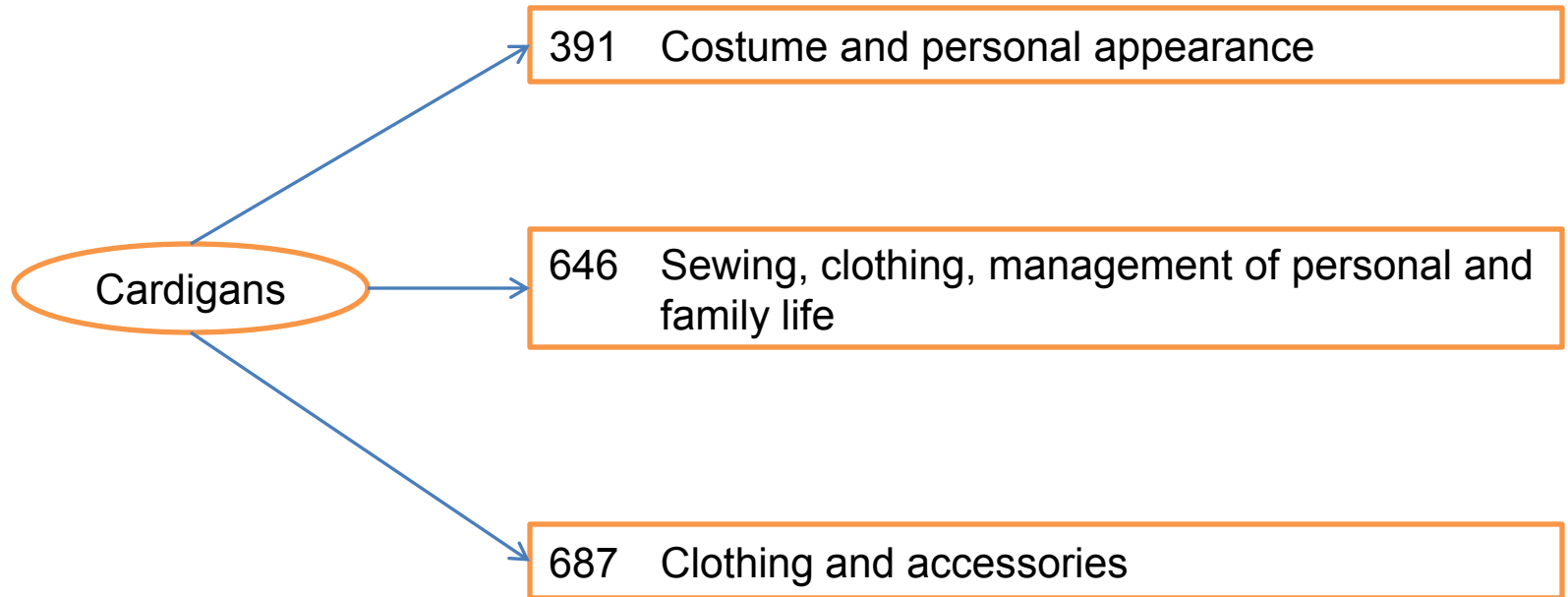


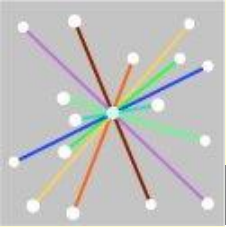
### Guidelines:

- One-to-many strategy
- Deep level mapping
- Degrees of Determinacy

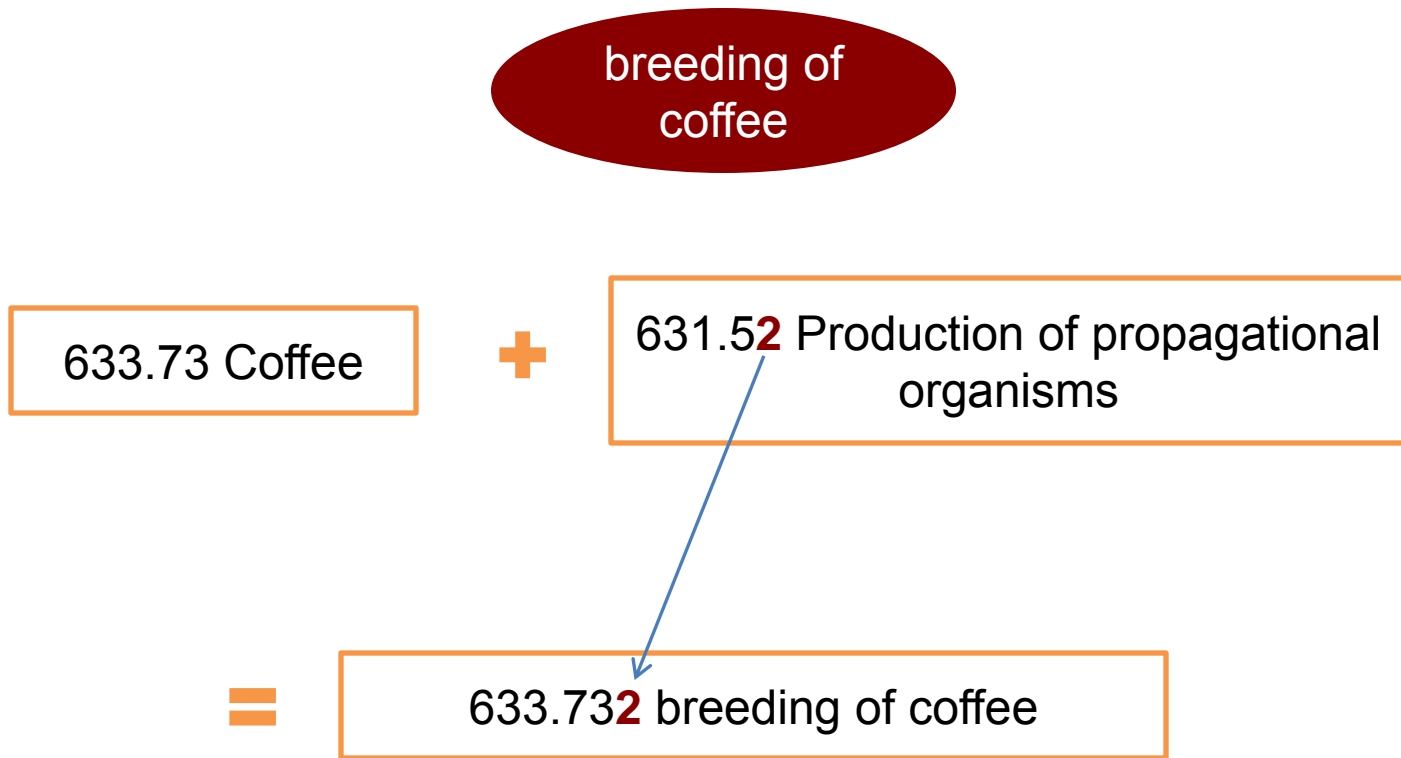


## *Unidirectional one-to-many strategy*

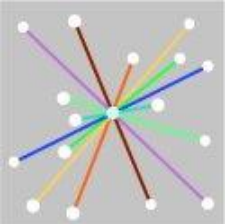




## Deep level mapping

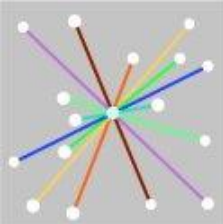




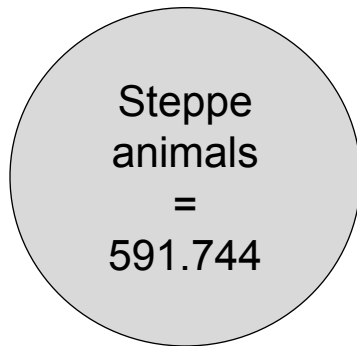


### Degrees of Determinacy (D)

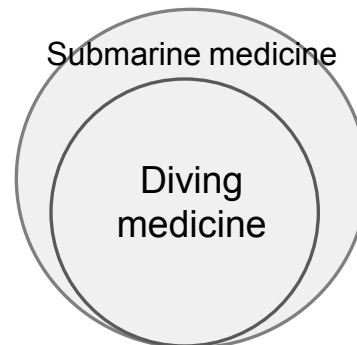
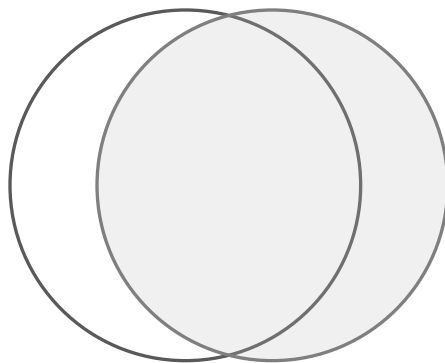
- indicate **conceptual congruency** between SWD term and DDC class
- 4 degrees from full to partial coverage



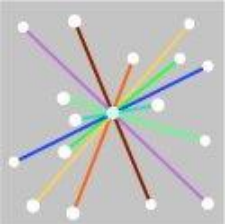
## Degrees of Determinacy (D)



D4:  
*full congruency*

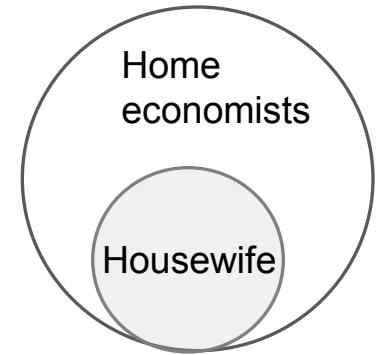
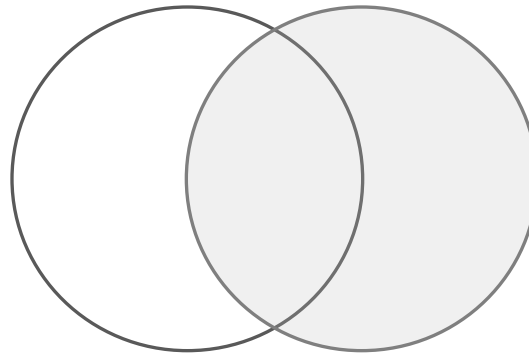


D3:  
*high congruency*

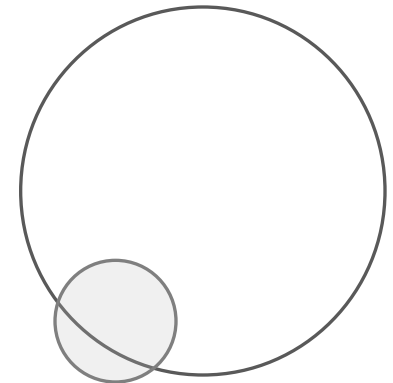
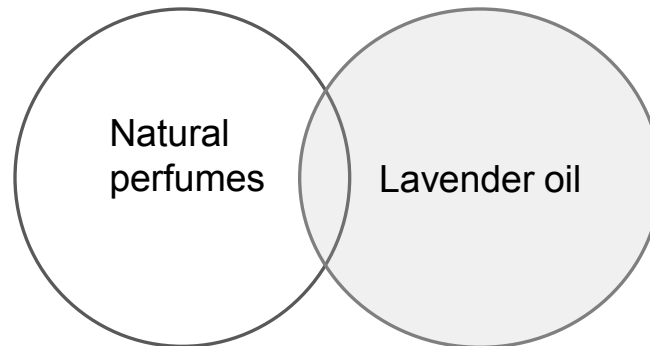


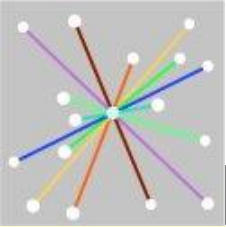
# CrissCross – Mapping Methods – Degrees of Determinacy

D2:  
*less coverage than D3*



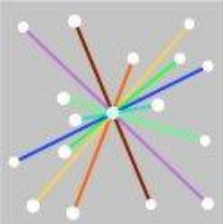
D1:  
*slight congruency*





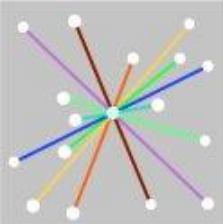
Benefits of the CrissCross project for conceptual interoperability and retrieval

*Retrieval Scenarios*



CrissCross mappings can be used

- to enhance access to the DDC and to DDC-indexed documents
- to structure document sets (search result lists)
- to support conceptual exploration



## Enhancing access to DDC classes and DDC-indexed documents

### SWD

**Langsamer Walzer**

UF English waltz  
UF English-Waltz

### DDC

D2

**784.18846** Walzer  
(EN = Waltzes)

*Relative Index Terms:*  
Walzer — Musik

D2

**793.33** Gesellschaftstänze (Rundtänze)  
(EN = Ballroom dancing (Round dances))

*Relative Index Terms:*

Diskotanz

Foxtrott

Gesellschaftstänze

Jitterbug

Polkas

Rumbas

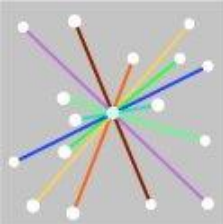
Rundtänze

Sambas

Tangos

Turniertänze

Walzer



## 793.33 Gesellschaftstänze (Rundtänze) (*EN = Ballroom dancing (Round dances)*)



DDC: **793.33** AND SWD: **Gesellschaftstanz**



DDC: **793.33** AND SWD: **Langsamer Walzer**

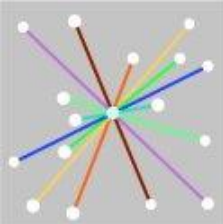


DDC: **793.33** AND SWD: **Tango**

[...]



DDC: **793.33** AND SWD: **Bossa Nova**



SWD heading: **Hängebrücke** (*EN = suspension bridge*)



SWD: **Hängebrücke**

AND DDC: **624.23** Suspension and cable-stayed bridges  
(discipline: Engineering)



SWD: **Hängebrücke**

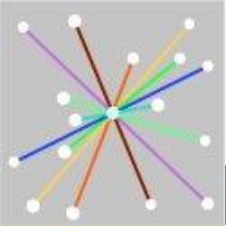
AND DDC: **725.98** Bridges, tunnels, moats  
(discipline: Architecture)



SWD: **Hängebrücke**

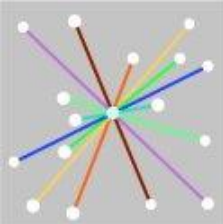
AND DDC: **388.132** Bridges  
(discipline: Transportation)





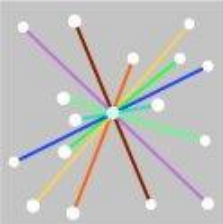
CrissCross supports conceptual exploration by:

Benefits of the CrissCross project for conceptual interoperability and retrieval



CrissCross supports conceptual exploration by:

*Utilization of the semantic environment of a term  
based on a priori conceptual relations*

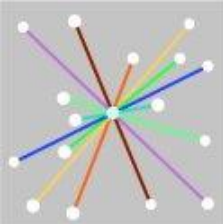


A priori conceptual relations in SWD and DDC:

*Hierarchical relationships*

*Equivalence relationships*

*Associative relationships*



## Hierarchical relationships

### SWD

### DDC

Gefühl (*EN = emotion*)

NT Antipathie

NT Affekt

NT Intuition

NT Liebe

NT Mutterliebe

NT Nächstenliebe

NT Scham

NT Leidenschaft

NT Eifersucht

152.4 Emotionen

152.40287 Tests der emotionalen Intelligenz

152.41 Liebe und Zuneigung

152.42 Vergnügen, Genuss, Glück, Freude,  
Begeisterung

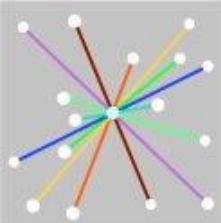
152.43 Witz und Humor

152.44 Schuld und Scham

152.46 Furcht

152.47 Zorn

152.48 Eifersucht und Neid



## Hierarchical relationships

### SWD

Zorn (*EN = anger*)

NT –

BT –

### DDC

150 Psychologie  
152-158 Einzelne Themen der Psychologie  
152 Sinneswahrnehmung, Bewegung, Emotionen, physiologische Triebe  
152.4 Emotionen  
**152.47 Zorn**

170 Ethik  
172-179 Angewandte Ethik (Sozialethik)  
179 Andere ethische Normen  
**179.8 Laster, Fehler, Mängel**  
**Including Zorn**

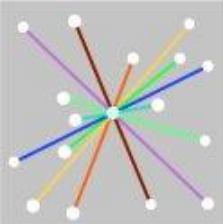
240 Christliche Ethik, praktische Theologie

241 Christliche Ethik  
**241.3 Sünde und Laster**  
**RI entry: Zorn — Ethik — Religion — Christentum**

D3

D2

D1



## Equivalence relationships

**SWD**

Zorn (*EN = anger*)

UF **Groll**

**DDC**

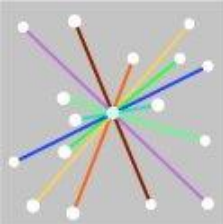
152.47 Zorn

*Class here aggressive Stimmungen  
und aggressive Gefühle (EN =  
aggressive moods and feelings)*

*Relative index terms:*

**Ärger** (*EN = anger*) — Psychologie

**Aggression** — Psychologie — Emotionen



## Associative relationships

**SWD**

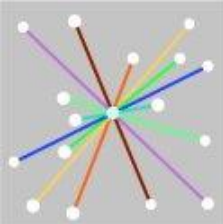
**DDC**

Zorn (*EN = anger*)

152.47 Zorn

RT –

*Class comprehensive works on  
Aggressionspsychologie in 155.232*



## Associative relationships

**SWD**

Zorn (*EN = anger*)

RT –

**DDC**

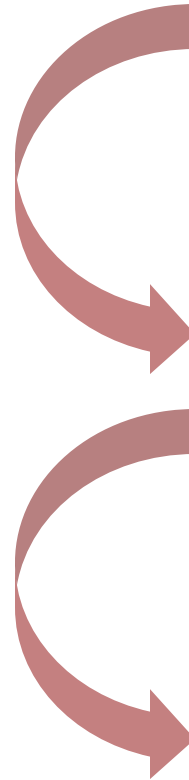
152.47 Zorn

*Class comprehensive works on Aggressionspsychologie in 155.232*

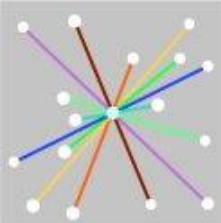
**155.232** Eigenschaften (*EN = traits*)

*Including [...] Extraversion, Introversion; comprehensive works on Aggressionspsychologie*

*Class interdisciplinary works on Aggression, aggressive soziale Interaktionen in 302.54*







# CrissCross – A priori conceptual relations in SWD and DDC

## Klassen

Notation	Bezeichnung
	<u>DDC-Übersicht</u>
<u>100</u>	<u>Philosophie &amp; Psychologie</u>
<u>150</u>	<u>Psychologie</u>
<u>152-158</u>	<u>Einzelne Themen der Psychologie</u>
<u>152</u>	<u>Sinneswahrnehmung, Bewegung, Emotionen, physiologische Triebe</u>
<u>152.4</u>	<u>Emotionen</u>
<b>152.47</b>	<b>Zorn</b>

**Einschließlich:** Frustration

**Hier auch:** aggressive Stimmungen und Gefühle

Klassifiziere umfassende Werke über Aggressionspsychologie in 155.232

### Registereinträge

- Aggression — Psychologie — Emotionen
- Aggressivität — Psychologie — Emotionen
- Ärger — Psychologie
- Frustration
- Zorn
- Zorn — Psychologie

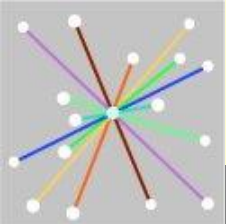
SWD-DDC mappings  
in DDC class

### SWD-Schlagwörter

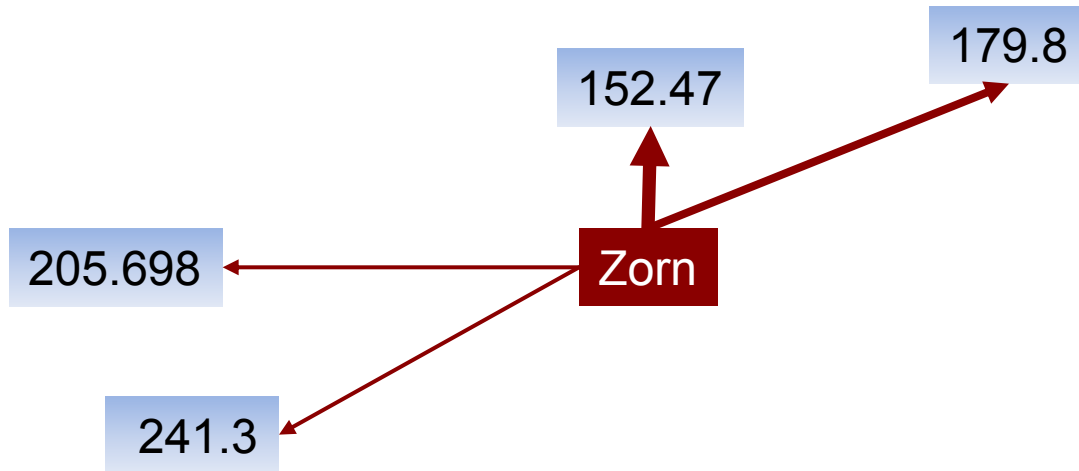
### Relevanz

<u> s Aggression</u>	<b>hoch</b>
<u> s Ärger</u>	
<u> s Zorn</u>	
<u> s Aggression-Frustrations-Hypothese</u>	<b>mittel</b>
<u> s Aggressivität</u>	
<u> s Frustration</u>	
<u> s Frustrationstoleranz</u>	
<u> s Schmollen</u>	
<u> s Verbalaggression</u>	
<u> s Wut</u>	
<u> s Amok</u>	<b>gering</b>
<u> s Autoaggression</u>	
<u> s Destruktion</u>	
<u> s Destruktionstrieb</u>	
<u> s Provokation</u>	
<u> s Selbstdestruktion</u>	

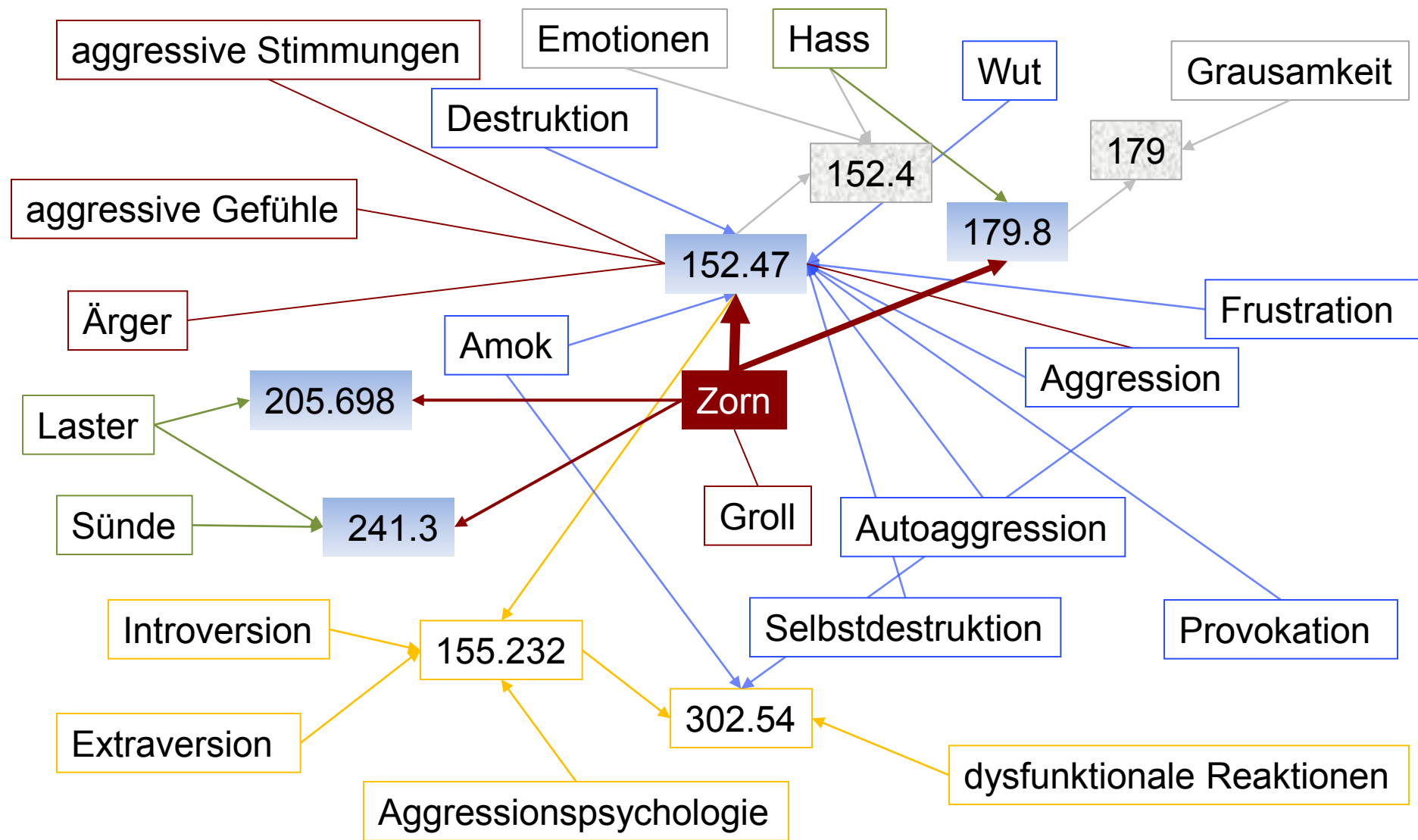
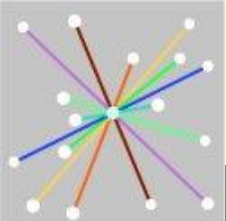
Benefits of the CrissCross project for conceptual interoperability and retrieval



# CrissCross – Conceptual Exploration



# CrissCross – Conceptual Exploration



## CrissCross approach in broader research contexts

- idea of an international comprehensive knowledge organization system (core system + satellites)
- utilization of CrissCross mappings to support systems for automatic classification
- differentiated interoperability models to enhance expressivity and functionalities of mapping relations

