

# **Synergy of contexts in the light of digital humanities: a pilot study**



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# SYNERGY OF CONTEXTS

Pilot Study - the linguistic analysis of meaning

LADDER [EN] / DRABINA [PL]

## HUMANISTIC KNOWLEDGE + DIGITAL TOOLS



**BIG-DATA ANALYSIS**



**CLARIN ERIC:** Common Language Resources and Technology Infrastructure, European Research Infrastructure Consortium

**PIWordNet**

**WordnetLoom Viewer**



**Investigation:** SurveyMonkey (in EN & PL) & Questionnaire (only in PL)

Results comparison with: Ngram Viewer, Google Trends, National Corpus of the Polish Language

# CLARIN - European Research Infrastructure for Language Resources and Technology

CLARIN makes digital language resources available to scholars, researchers, students and citizen-scientists from all disciplines, especially in the humanities and social sciences, through single sign-on access. CLARIN offers long-term solutions and technology services for deploying, connecting, analyzing and sustaining digital language data and tools. CLARIN supports scholars who want to engage in cutting edge data-driven research, contributing to a truly multilingual European Research Area. Read more... (/content/about-clarin)



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## Services, Tools and Data

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## European roadmap of projects:

- **research archives**
- **tools**
- **infrastructure in humanities & social studies**

## Language resources online & in electronic forms:

- **digital archives**
- **electronic dictionaries**
- **corpora**
- **language models, etc.**
- **texts**
- **blogs**
- **press releases, etc.**

## Software tools for natural language processing to researchers

**Blog: Metadata curation task force meeting in Vienna (/blog/blog-metadata-curation-task-force-meeting-vienna)**

# PLWORDNET

## SŁOWOSIEĆ

a large network of words

191 000 words

285 000 word senses

over 600 000 relations

239 000 Polish-English entries

80 000 units with emotional annotation

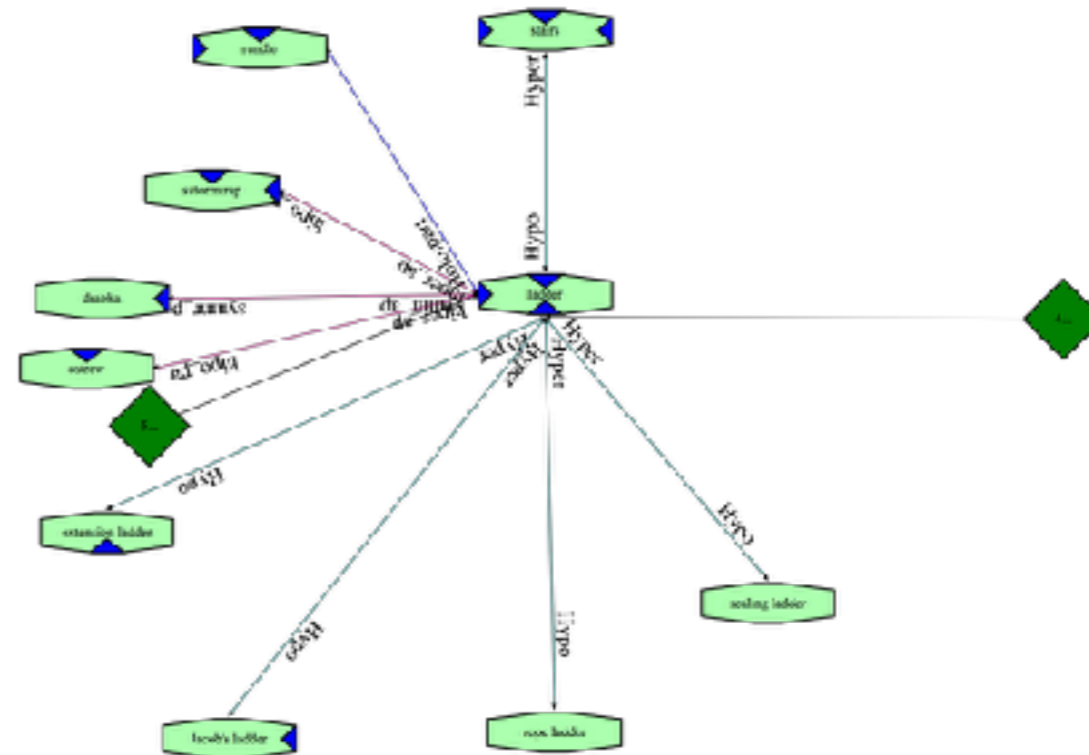
free licence

largest wordnet in the world

**Constantly updated  
lexico-semantic network**

**Senses are interconnected by relations**

'concept map'



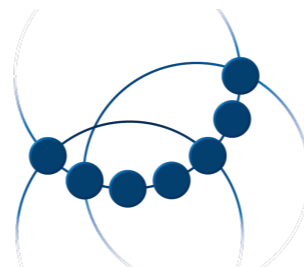
Project is developed thanks to:



Ministerstwo Nauki  
i Szkolnictwa Wyższego

**CLARIN**

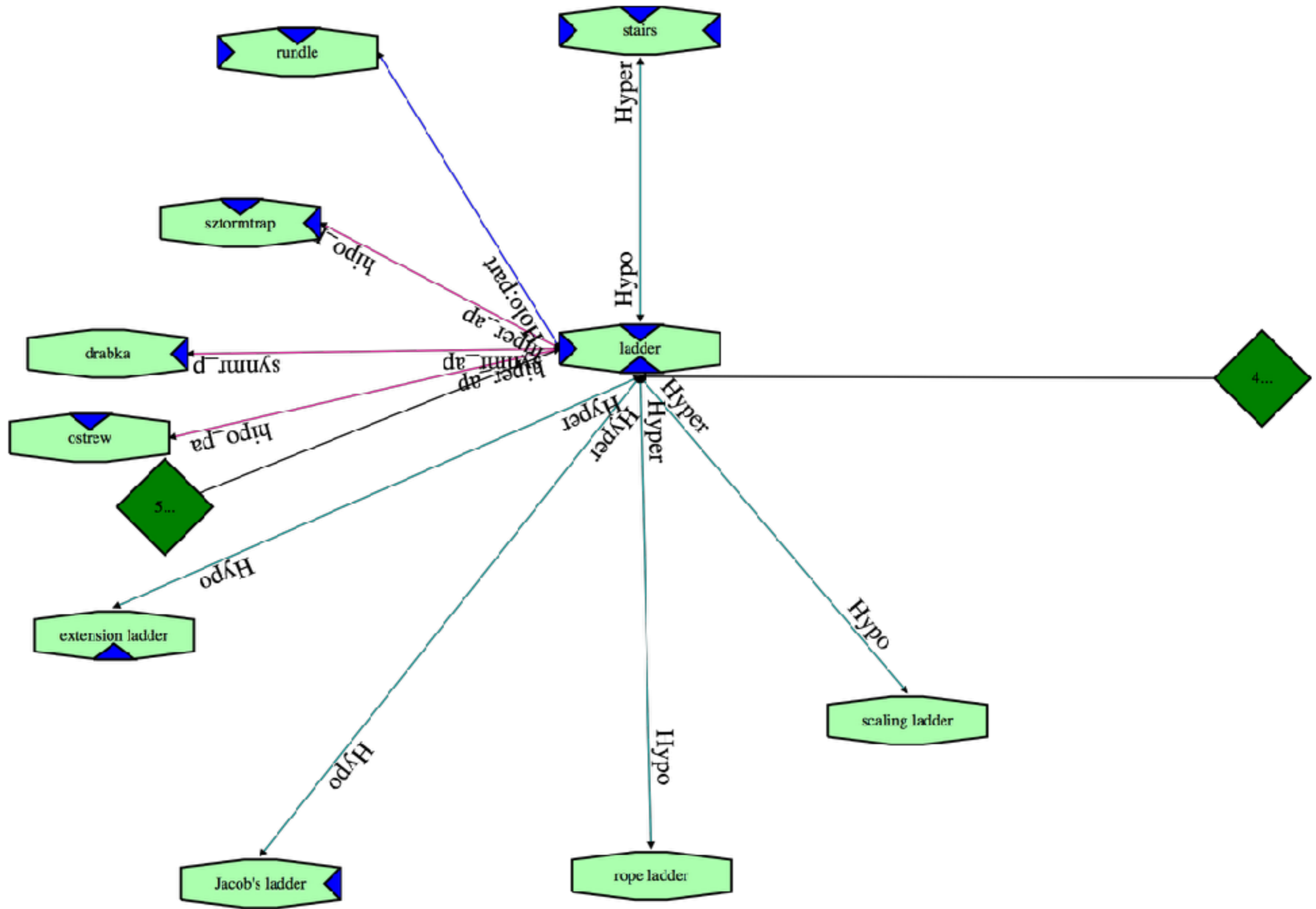
Common Language Resources and  
Technology Infrastructure

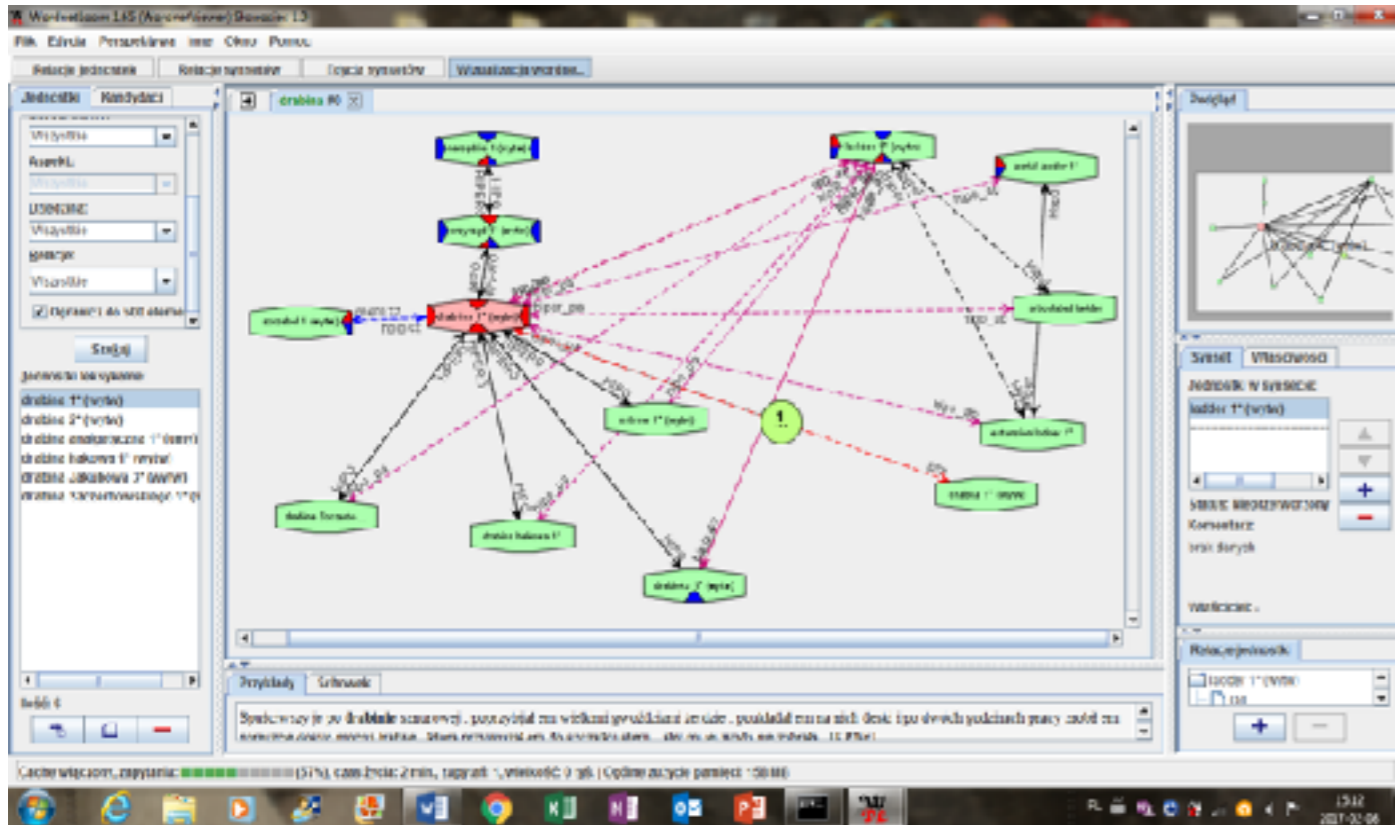


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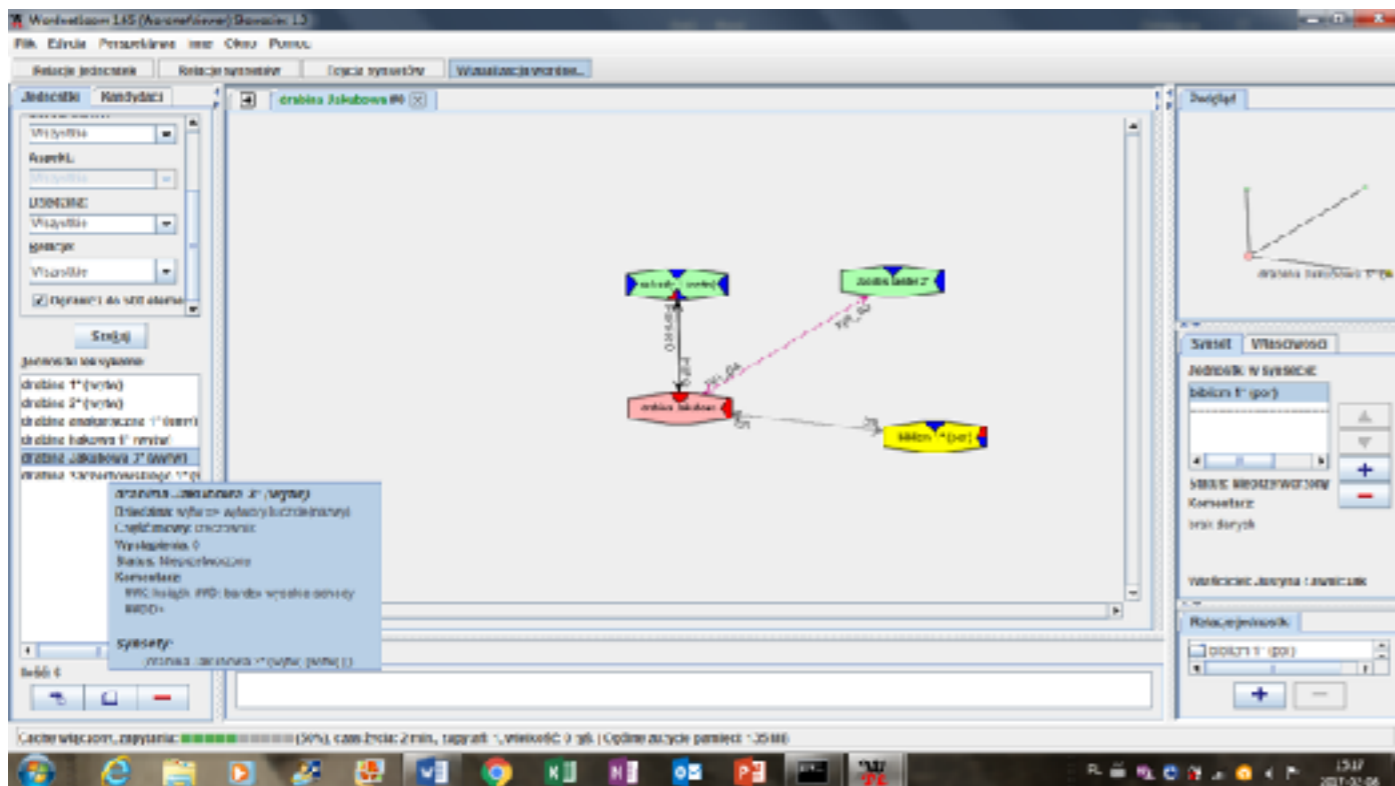




**Semantic relations** of *ladder* [EN]/*drabina* [PL]:

- synonymy {partial, (inter)register, (inter)pragmatic},
- hyponymy,
- holonymy,
- meronymy,
- hyperonymy.

A path to the highest hyperonym is constructed in the following order:  
**an entity, physical entity, object, artifact, stairway.**



Hyponyms of the word *ladder*/*drabina*:

*Jacob's ladder,*  
*rope ladder,*  
*scaling ladder,*  
*Szczerbowski's ladder,*  
*step ladder,* etc.

Fig. 1. Print screens of semantic relations of the word *drabina/ladder* (Source: <http://plwordnet.pwr.wroc.pl/wordnet/>)

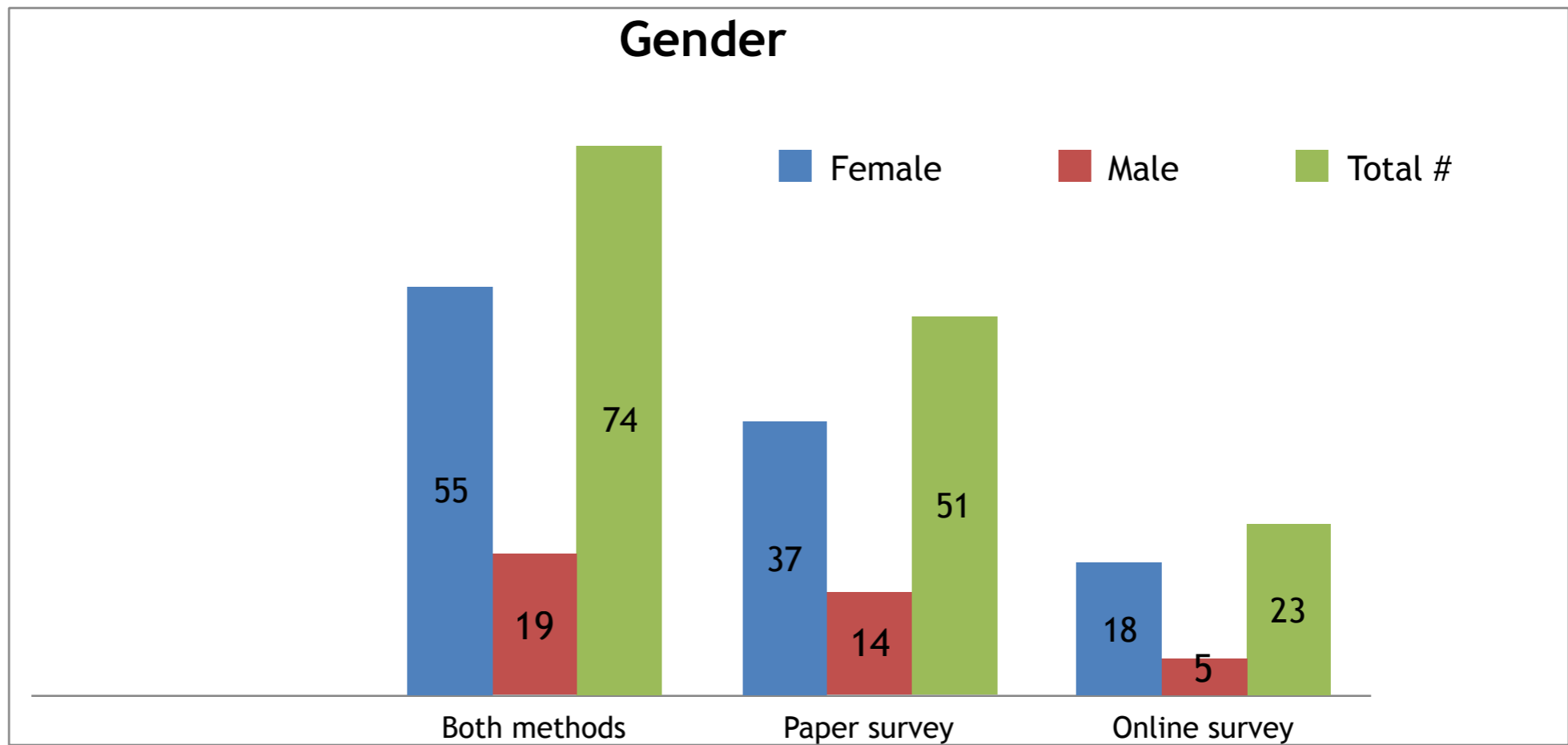
# Pilot study

## *Data gathering*

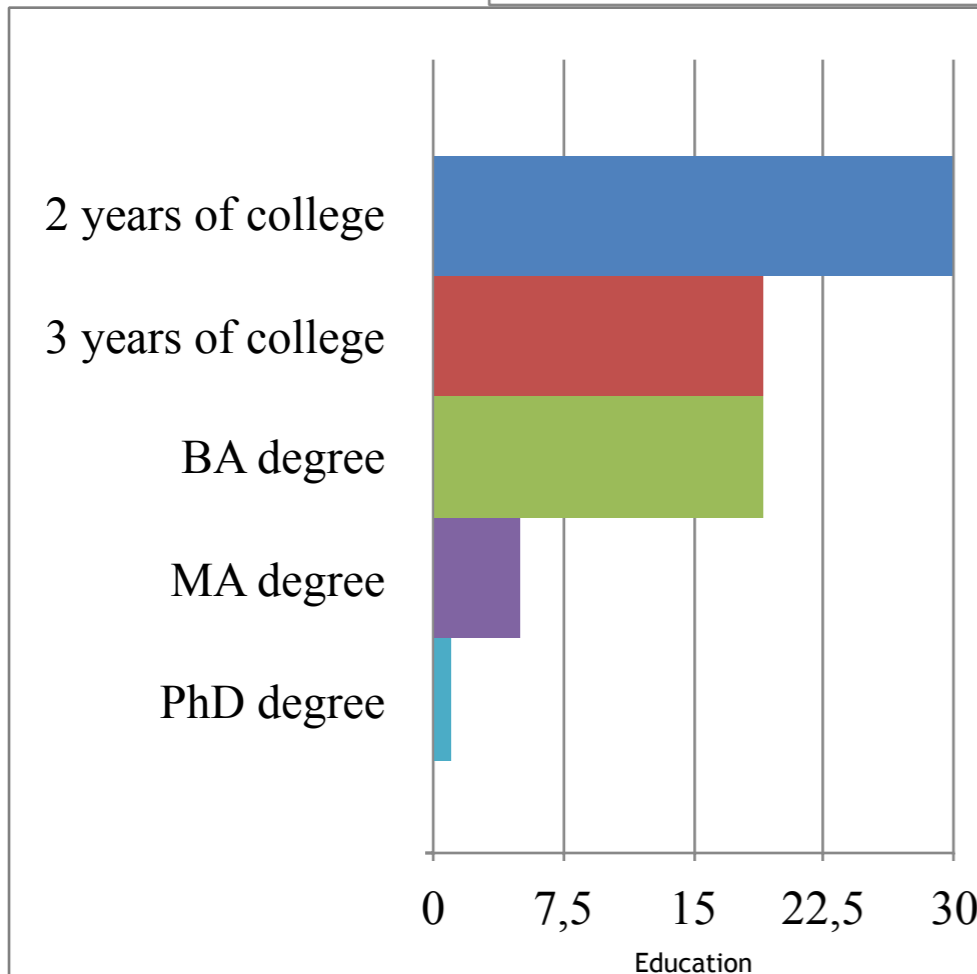
- conducted from December 2016 to June 2017;
- based on a survey performed twofold: (1) on-line (via SurveyMonkey: both in English & Polish), (2) in a traditional way by administering the questionnaire to respondents and asking them to answer the questions (only in Polish);
- the prepared sets of queries were designed in such a manner that all key informants could comprehend them in the same way;
- the results were compared with **plWN entries**, **Tweeter** and **online resources** (i.e. **NGram Viewer**, **Google Trends**, **National Corpus of the Polish Language**).

## *Hypothesis*

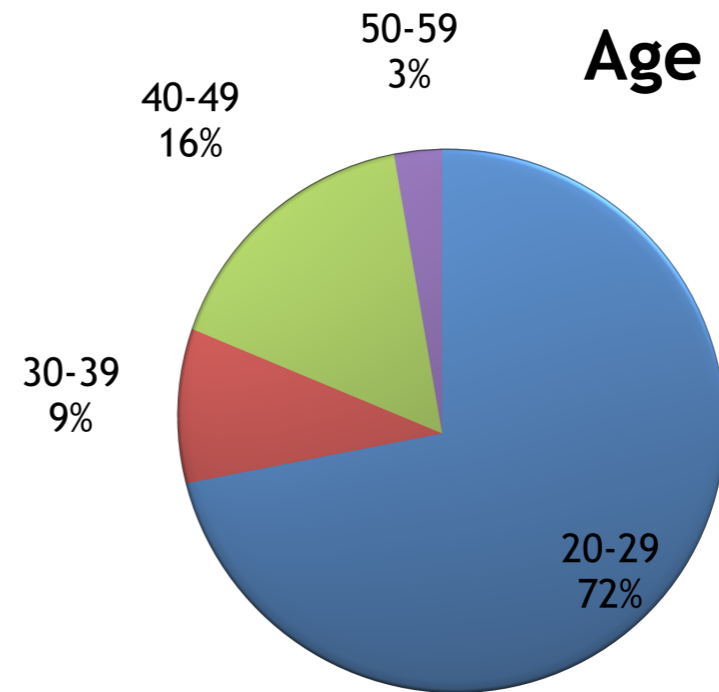
- checking the respondents' perception of the word *ladder/drabina* in a variety of contexts;
- it was predicted that the participants will primarily highlight the general understanding of that word in a given domain and then proceed to its interrelated senses depending on their own personal cognition and comprehension of ideas.



**Diagram 1 – The respondent's number and gender**



**Diagram 3 – The respondent's education**

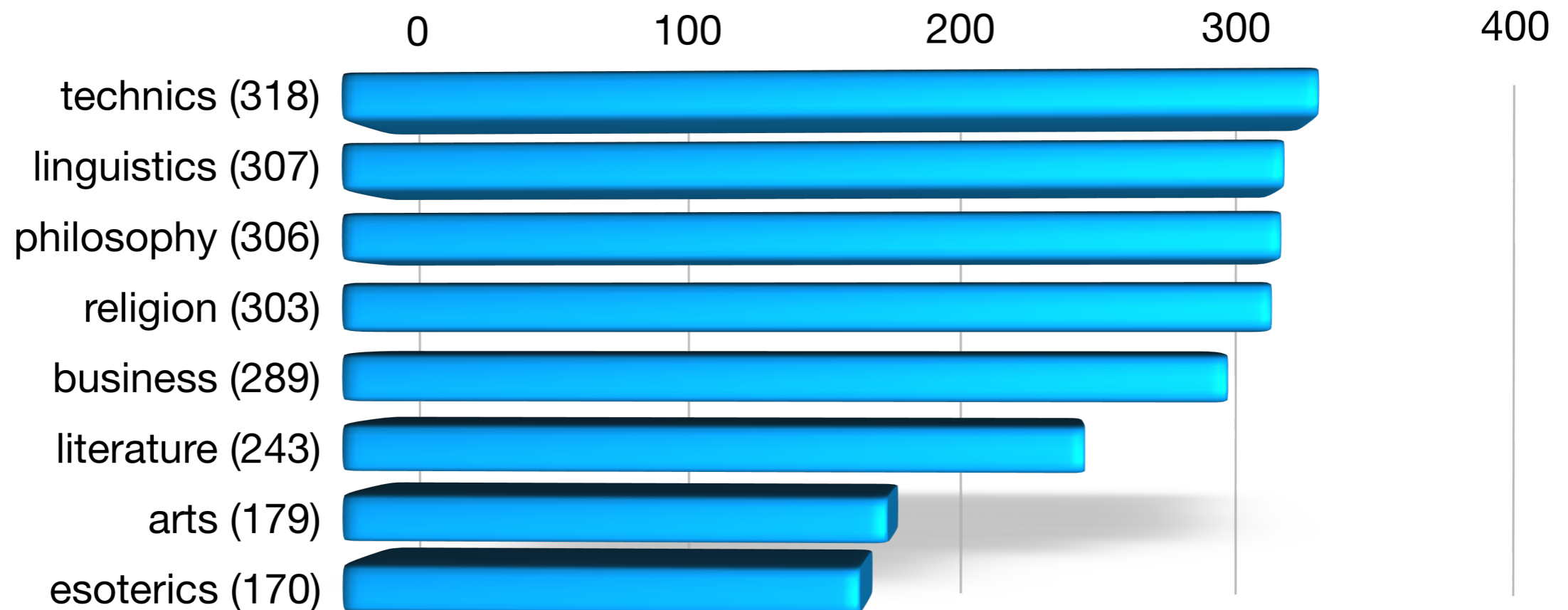


**Diagram 2 – The respondent's age**



# Results

evidence of numerous sources/domains, which highlight the meaning(s) of the word *ladder/drabina*



CONCEPTS	REFERENCE							
	religion	philosophy	business	technics	literature	esoterics	arts	linguistics e.g. idiomatic or metaphoric
<i>ladder of success</i>	2	(11)	[69]	8	10	--	(11)	{36}
<i>social ladder</i>	(20)	[37]	15	3	(20)	3	7	{32}
<i>ladder of loyalty</i>	(17)	[30]	{23}	2	2	1	1	(17)
<i>corporate ladder</i>	3	5	[63]	{17}	3	1	3	(13)
<i>ladder of Saint Thomas Aquinas</i>	[19]	{17}	1	--	11	8	12	(15)
<i>spiritual ladder</i>	[69]	{27}	2	1	12	(26)	16	18
<i>ladder of beings</i>	{29}	[50]	3	3	11	(17)	9	(17)
<i>Jacob's ladder</i>	[60]	16	--	2	(22)	1	10	{23}
<i>feudal ladder</i>	3	{23}	17	5	[25]	--	5	(18)
<i>ladder to heaven</i>	[64]	21	3	--	20	8	{26}	(22)
<i>ladder of dreams</i>	7	[41]	13	6	(35)	10	31	{36}
<i>articulated ladder</i>	--	--	1	[63]	2	--	1	1
<i>fire ladder</i>	--	1	3	[69]	5	--	4	2
<i>telescopic ladder</i>	--	--	--	[66]	2	4	2	3
<i>general duty extension ladder</i>	--	1	4	[65]	3	2	1	4
<i>witches' ladder</i>	5	10	--	--	{37}	[42]	(21)	(20)
<i>'Tarot's symbolic meaning of ladder'</i>	2	3	--	--	{13}	[46]	(11)	7
<i>career ladder</i>	3	(13)	[72]	8	10	1	8	{23}

Legend:

**[# in square brackets]:**  
the first highest number  
of responses

**{# in curly brackets}:**  
the second highest  
number of responses

**(# in round brackets):**  
the third highest  
number of responses

**Table 1 – Matching expressions with their reference: the number of answers provide**

# Google Books Ngram Viewer

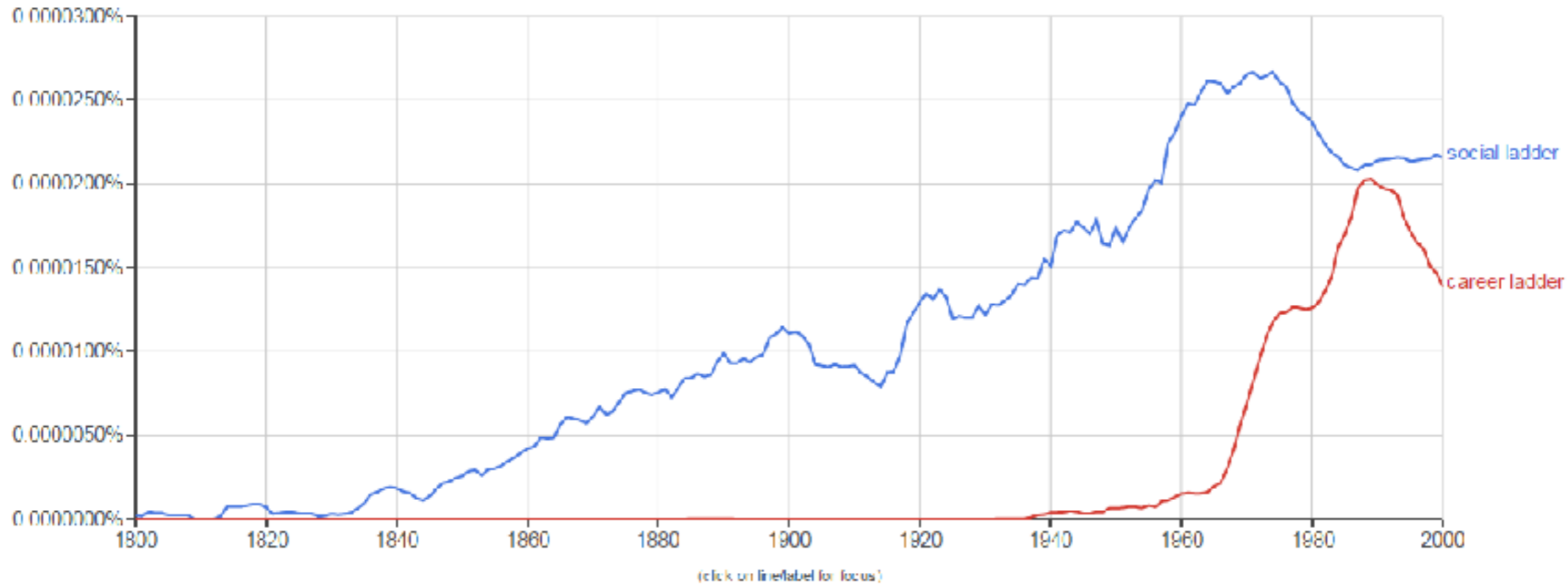
Graph these comma separated phrases:   case-insensitive

between  and  from the corpus:  with smoothing of  [Search lots of books](#)

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<i>social ladder</i>	(20)	[37]	15	3	(20)	3	7	{32}
<i>career ladder</i>	3	(13)	[72]	8	10	1	8	{23}
	Religion	Philosophy	Business	Technics	Literature	Esoterics	Arts	Linguistics

	I DEFINITELY AGREE	I AGREE	I'm NOT CERTAIN	I DISAGREE	I DEFINITELY DISAGREE
1. <i>'The ladder of dreams' is a metaphor pertaining to life and happiness.</i>	11	[46]	9	6	2
2. <i>Walking under the ladder may indicate bad luck.</i>	4	8	12	[29]	21
3. <i>The ladder is a 'bridge' between a chance of escape and orderly transition from the world of truth to the new covenant.</i>	8	22	[30]	10	3
4. <i>'The ladder of buyer's loyalty' illustrates the idea of marketing relationship. It indicates the place where the buyer is identified in the service</i>	9	[34]	27	3	1
5. <i>'Ladder' is a word composed of 6 letters (2 vocalics and 4 consonantals) and/or 6 sounds (2 vowels and 4 consonants).</i>	[50]	{22}	1	--	1
6. <i>A ladder may depict a timeless hierarchy.</i>	21	[38]	10	4	1
7. <i>„Even the highest ladder has got the last rung”.</i>	[26]	[26]	17	3	2
8. <i>A ladder may depict stages in the production process.</i>	11	[46]	13	4	--
9. <i>Only one person may stand on a ladder.</i>	15	12	9	[29]	10

**Table 2 – Respondents' opinions**

# Recapitulation:

- a great part of survey participants is able to unify the meanings of the word *ladder/drabina* by matching a direct sense out of the provided collection of word meanings in the adequate context;
- language users can easily determine the denotative meanings of the word, as well as exemplify that lexeme in connotative sentences by illustrating their point through metaphors or idiomatic expressions;
- the present study has got shortcomings:
  - (a) rather a small group of respondents involved in the preliminary investigation,
  - (b) the study involved only Polish language users that have a good command of the English,
  - (c) only one lexeme (*ladder/drabina*) was taken into account,
  - (d) the necessity to undertake a larger empirical study based on a variety of instruments found in digital infrastructure.



<https://www.mysoftwaretesting.com>

# THANK YOU