

Things to do with data: The CLARIN European Research Infrastructure

CLARIN

Common Language Resources and Technology Infrastructure

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Outline of today's talk

- What sort of data and what sort of research? Language resources and tools in research in the humanities and social sciences
- What are the problems? Sharing, sustaining, access, ease of use, etc.
- What's the solution? CLARIN!
- How's that going? Barriers, problems, success stories and lessons
- How do I find out more?



What sort of data?

- A language corpus is a collection of naturally occurring language data compiled to represent a language or language variety
- In electronic form
- It can contain more than text (e.g. annotations, metadata, other media)





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earch:	Show 1	0 • entries				First Previous 1 2 3 4 5 Next La
ID .	Title	♦ Author ♦	Date \$	Language 🗘	Availability \diamond	Genre
193	The Lampeter Corpus of Early Modern English Tracts	Josef Schmied, Claudia Claridge, Rainer Siemund (ed.)	1800	English	CC BY-SA	
555	French Oral Narrative Corpus	Janice Carruthers	2013-08	French	Free for non-commercial use	Linguistic corpora
554	British National Corpus, XML edition	BNC Consortium	2007-03-06	English	BNC User Licence	Linguistic corpora
553	British National Corpus, Baby edition	BNC Consortium	2007-03-06	English	BNC User Licence	Linguistic corpora
551	British National Corpus Sampler	BNC Consortium	2007-03-06	English	BNC User Licence	Linguistic corpora
544	GerManC	Martin Durrell; Paul Bennett; Silke Scheible; Richard J. Whitt;	2012-05	German	Free for non-commercial use	Linguistic corpora
<u>.542</u>	VOICE: Vienna-Oxford International Corpus of English	Barbara Seidlhofer ; Angelika Breiteneder; Theresa Klimpfinger; Stefan Majewski; Ruth Osimk-Teasdale (POS- tagged versions); Marie-Luise Pitzl; Michael Radeka (POS-tagged versions)	2011-08	English	Free for non-commercial use	Linguistic corpora
<u>.541</u>	VU Amsterdam Metaphor Corpus	Gerard J Steen; Aletta G Dorst; J Berenike Herrmann; Anna A Kaal; Tina Krennmayr	2010-09	English	Free for non-commercial use	Linguistic corpora
.540	Speech, Thought and Writing Presentation Corpus (STWP)	Culpeper, Jonathon; Semino, Elena; Short, Mick; Wynne, Martin	2008-10	English	Free for non-commercial use	Linguistic corpora
539	British Academic Written English Corpus	Nesi, Hilary; Gardner, Sheena; Thompson, Paul; Wickens, Paul	2008-10	English	Restricted	Linguistic corpora

EI Texts

Created following the guidelines of the Text Encoding Initiative, available in a variety of formats to read, download or link to.

Corpora

Collections of language data comprising a number of texts from different sources, usually compiled for the purposes of linguistic research

egacy formats

A variety of resources which have been collected since the OTA came into existence in 1976. Some have restricted access, which means that you have to ask for permission to use them, and many are in formats which some users may find difficult to use, although most are plain text. The OTA cannot offer support for dealing with legacy formats.



Some types of corpus

- Reference corpus:
 - General, big and 'balanced', representative of a language or variety, static and closed (no more material added)
- Monitor corpus:
 - Big, with new material added over time, used to monitor change
- Historical corpus:
 - Synchronic (from one time) or diachronic (from several time periods)
- Parallel corpus:
 - Same texts in two or more languages
- Multi-media/multi-modal corpus:
 - Not only text (sound, images, gesture)



More than text

The corpus may also contain other information vital to searching and interpreting results, e.g.:

- information about the texts, speakers, context etc. (*metadata*)
- linguistic information: parts of speech, lemmata, grammatical structure, etc (annotation)
- other information: discourse structure, extra-linguistic features, etc. (*structural markup*)



How do you use a corpus?

A typical workflow:

- lexical starting point (i.e. start by searching for a word or phrase)
- retrieve examples
 - examine quantitatively (count things)
 - look for patterns
 - try to account for meanings and functions
 - adjust and search parameters and search again
- Compare and contrast, summarise
- Construct a hypothesis, investigate further



You	Your query "spoof" returned 62 hits in 44 different texts (98,313,429 words [4,048 texts]; frequency: 0.63 instances per million words)										
 <	•	« <u>»</u>	Show Page: 1	Show Sentence View	Show in random order		New Query	T	Go!		
No	F	ilename]	Hits 1 to 50 Page 1 / 2						
1	<u>A2</u>	<u>2D 38</u>	with his conservative values,' he said. A series of		<u>spoof</u>	or obsessively realistic 1960s westerns (Cat Balou, Butch Cassidy and					
2	<u>A7</u>	<u>L 1262</u>	2 's class structure, but seemed all at sea with his Bond				, Modesty Blaise (1966). There simply isn't any				
3	<u>A9</u>	<u>0T 40</u>	' choice What's going on. By Stephanie Nettell FAST-MOVING comic-strip				on US life and politic	cs, Phoenix	Beam's cult American Eagle		
4	AA	AH 199	I	Harry Enfield. Having worked his v	vay up via his own live	<u>spoof</u>	chat show Vic's Big	Night Out, l	he has latterly been		
5	AB	<u>3W 322</u>		. Later, there was frenzied acti	vity in the creation of a	<u>spoof</u>	campaign for Tunnel Vision, a 'new' TV channel.				
6	AB	<u>3W 389</u>		with loose shoes. Why travel thou	sands of miles to visit a	<u>spoof</u>	Paris? It was inevitab	ole, she supp	osed, when America was		
7	AC	CP 126	the	e street, this club flyer advertises Ne	wcastle's Rockshots. A	<u>spoof</u>	on washing powder	packets, the	colourful T-shirts are available from the		
8	AC	CP 2313		small screen for the last two years	(the South Bank Show	<u>spoof</u>	, Norbert Smith , was	a revamp of	f an old idea)		
9	<u>AE</u>	<u>DR 450</u>	factor'.	Some declared Minogue-free zones	and preferred to play a	<u>spoof</u>	record instead, 'I Sho	ould Be So Y	rucky'. The		
10	AE	<u>E6 1463</u>		Thackeray began, but does not ap	pear to have finished, a	<u>spoof</u>	, now in the New Yor	rk Public Li	brary, which begins:		
		<u>NO 351</u>		the 1955 Berlin Tunnel (see C	• * •	<u>spoof</u>	-	-	ears with false information. But because so		
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13	AP	<u>PU 1490</u>		Lorna made a comedy western, a b		<u>spoof</u>	in slow succession. H	Hitchcock w	anted her for The Birds but she		
		J 2977		leave here, so does Fred		<u>spoof</u>	, but I usually come o	-	-		
		<u>J 2129</u>		I love about New Scientist is the		<u>spoof</u>	article or two in the is		•		
		<u>J 2130</u>		•	e fun, though, when the	<u>spoof</u>	is too obvious — the				
		<u>NT 109</u>	h	ad rejected it. Funnily enough, Pun		<u>spoof</u>	, with the same book,	•			
		<u>94 523</u>		the time word got out that the		<u>spoof</u>	, there was a sizeable		*		
		<u>BC 10844</u>		Wind — these are just some of the		<u>spoof</u>			ok Inside Spinal Tap will fill many		
		<u>BC 11760</u>	2	Mrs Robinson Lemonheads Diar	• • •	<u>spoof</u>			Princess of Wales has obtained a		
		<u>BC 11762</u>		obtained a copy of the video		<u>spoof</u>			e Royal Family and which will		
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What sorts of research can you do with a corpus?

- Insights into real language usage
- Insights into history and culture via the writing and debates of the past
- Tracking social attitudes and social change
- Identifying interesting areas to explore in the archives in the textual record



Big data leads to digital transformations

- Data-driven research into language "What words and structures do I find in this sample of language?"
- Asking new research questions *"How did the grammar of everyday English speech and writing change across the twentieth century?"*
- Answering old questions in different ways "How much free indirect speech does Jane Austen use in her novels?"
- Re-examine old questions and statements which were formulated in the absence of systematic use of data "Is it true that writers only started to refer to 'the state' in its modern political sense in the early sixteenth century?"



- How do you read a million books?
- How do you reconcile the deep knowledge of texts, and close reading of them, with broad brush overviews, statistics, digests and trends?
- Do we still need language corpora in the age of the online data deluge?
- Have we got the infrastructure to support work like this in the humanities?



Interoperability and sustainability for digital textual scholarship

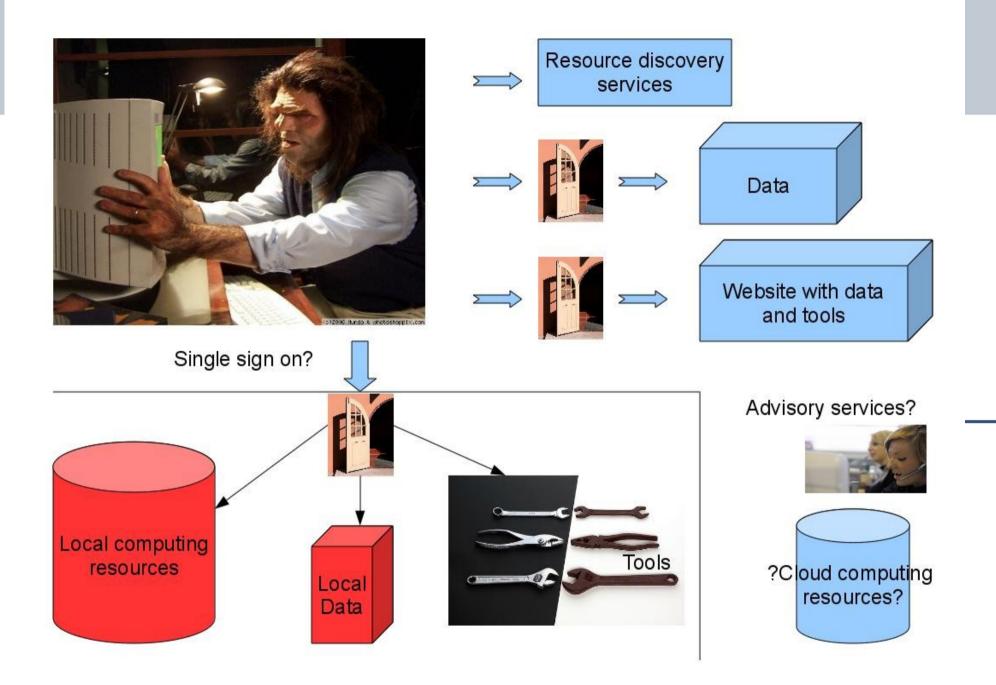


Well-known problems with digital resources relating to:

- fragmentation of communities, resources, tools;
- lack of connections, integration, and interoperability;
- sustainability of online services;
- lack of deployment of tools as reliable and available services

There is a potential solution in distributed, federated infrastructure services.



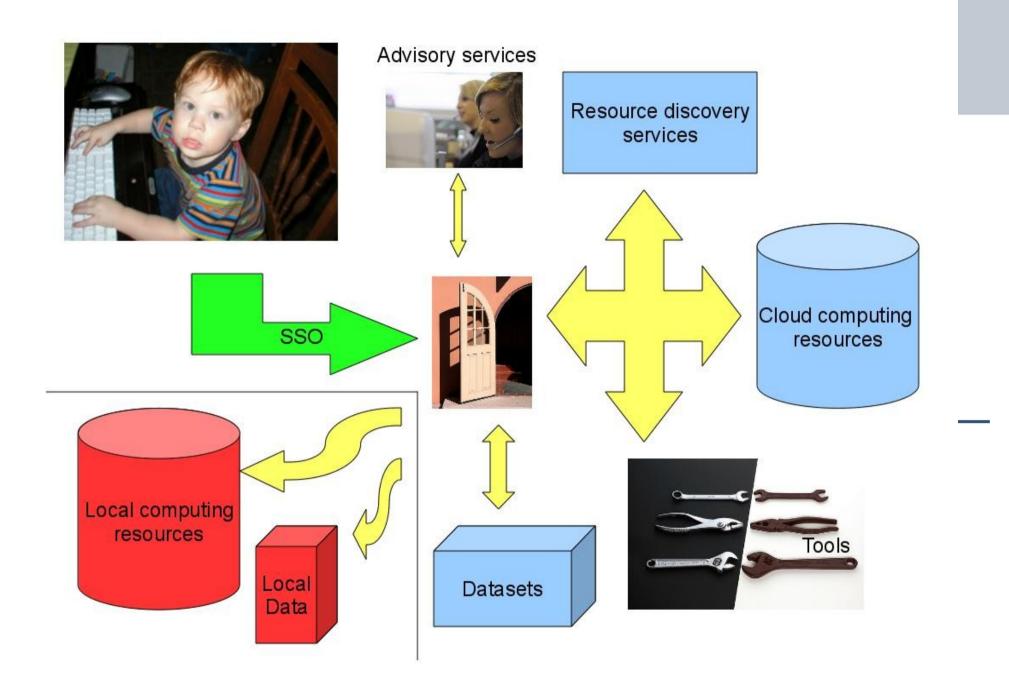


The CLARIN Vision



A researcher in the Oxford, from his desktop computer, can:

- Sign on with local authentication, and then:
- search for, find and obtain authorization to use corpora in Lancaster, Prague and Berlin
- select the precise dataset to work on, and save that selection
- run semantic analysis tools from Budapest and statistical tools from Tübingen over the dataset
- use computational power from the local, national or other computing centre where necessary
- obtain advice and support for carrying out all technical and methodological procedures
- save the workflow and results of the analysis, and share those results with collaborators in Paris, Vienna and Zagreb
- discuss and iteratively adopt and re-run the analyses with collaborators



Technical requirements for a distributed data system

- Data format standards
- Annotation standards
- Metadata standards
- Persistent identifiers and locations
- High availability for services
- A common authentication realm
- Documentation, support, and training for service providers
- Support for users
- Citable data and workflows
- Long-term business models





in a nutshell





WHY?

- Promote effective use language resources and technologies across the social sciences and humanities
- Overcome the fragmentation of existing language resources and tools
- Help to combine datasets and tools
- Overcome some of the high barriers of entry to digital research
- Help to make valuable resources emerging from research projects available for sharing and reuse

HOW MUCH?

- Preparatory phase c. €4m from FP7 project
- National infrastructure investments of c. €10m in 2014
- €1m p.a. paid by members towards central coordination
- Project funding income to CLARIN ERIC and centres

WHAT IS CLARIN?

- European Research Infrastructure Consortium (ERIC) on the European Strategy Forum on Research Infrastructures (ESFRI) roadmap
- Set of national infrastructures
- **Network** of technical centres, data providers, researchers, developers
- **Community** of researchers using language resources and tools to do new forms of digital research in the humanities and social sciences

WHAT DOES CLARIN DO?

- Provides access to language data
- Makes software available as as services
 - Links together repositories
- Links tools and data

•

- Offers training, advice, support
- Promotes the use of digital text and speech among scholars across the humanities and social sciences

WHEN?

- Preparation: 2008-2011
- Construction: 2011-2015
- Operation: 2013-
- Long-term perspective – no fixed end date

WHO?

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- Austria, Bulgaria, Czech Republic, Denmark, Estonia, Germany, Greece, Lithuania, Netherlands, Norway (observer), Poland, Portugal, Sweden, Dutch Language Union.
- Croatia, Finland, France, Italy, Slovenia and the UK in the process of joining
- Contacts and activities in all other European countries
- Millions of users can log in to access resources, thanks to the CLARIN Federation

WHO IS USING CLARIN?

Centres, tools and datasets bring users with them – not yet all measured as 'CLARIN users', but we do know:

- Virtual Language Observatory: 700,000 records, 32,000 visits in 2014
- More than 1,500 monthly unique visits to clarin.eu website
- More than 150 research papers published in 2013 mentioning CLARIN, according to recent bibliometric research



Explore the world of language resources and technology from different perspectives

VLO > Faceted search > Selections: Old English × Oxford Text Archive × Link | Report | Help of the jigsaw – SEARCH NARROW DOWN resource Search Use the categories below to limit the search results to those discovery matching the selected value(s). SEARCH RESULTS 20 results << < 1 2 >>> Showing 1 to 10 LANGUAGE across Old English × Expand Alfred's Orosius [Electronic resource] multiple + COLLECTION Resources: | 1 other | Oxford Text Archive X repositories Ancrene Wisse Preface [Electronic resource] Expand + RESOURCE TYPE (including Ancrene Wisse, a Middle English 'rule' or guide for female recluses, was composed in the West Midlands in the early SUBJECT + thirteenth century. It is a carefully-constructed work, divided into the Preface edited here and eight parts (called by the author distinctiones). This edition offers a corrected form of the text of the P... - FORMAT Oxford)... Q Type to search for more Resources: | 1 other | unknown type (20) Anglo Saxon Chronicle : selections / compiled by Anita Dowsing Expand ORGANISATION + Resources: | 1 other | + DATA PROVIDER Expand a Anglo-Saxon Charter Boundaries material [Electronic resource] Expand The resource consists of files made at different times and on different machines during the time of compilation. It is useful from an historical perspective only since the material is now being set up as the AHRB-funded 'Language of Landscape: + SEARCH OPTIONS Reading the Anglo-Saxon Countryside' project (started in October 2004), whic...



The first part



...and from separate online interfaces to resources...

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10	<u>AE</u>	<u>1463</u>				Thackeray began, but does not a	appear to have finished, a	<u>spoof</u>	, now in the New York Public Library, which begins:				
11	AN	<u>10 351</u>	the 1955 Berlin Tunnel (see Chapter 2), proceeded to				Chapter 2), proceeded to	<u>spoof</u>	Western intelligence for several years with false information. But because so				
12	AP	<u>0 902</u>				. Polanski arrived in Hollywood from	n Europe on the back of a	<u>spoof</u>	horror film called The Fearless Vampire Killers , a parody of the				
13	AP	<u>U 1490</u>				Lorna made a comedy western, a	a beach musical and a spy	<u>spoof</u>	in slow succession. Hitchcock wanted her for The Birds but she				
14	<u>B3</u>	<u>J 2977</u>				leave here, so does Fr	ed. He thinks he can play	<u>spoof</u>	, but I usually come out of the pub legless with as				
15	<u>B7</u>	<u>J 2129</u>				I love about New Scientist is t	the way you print the odd	<u>spoof</u>	article or two in the issue nearest 1 April. It does				
16	<u>B7</u>	<u>J 2130</u>				. It does rather spoil t	the fun, though, when the	<u>spoof</u>	is too obvious — the one in the 31 March issue was				
17	BN	T 109				had rejected it. Funnily enough, Pu	unch ran exactly the same	<u>spoof</u>	, with the same book, on 10 April 1991. If				
18	<u>BP</u> 4	4 523				the time word got out that th	e whole thing had been a	<u>spoof</u>	, there was a sizeable demand for the book and, rather				
19	<u>CB</u>	<u>BC 10844</u>				Wind — these are just some of	the hilarious works of the	<u>spoof</u>	heavy metal band whose new book Inside Spinal Tap will fill many				
20	<u>CB</u>	<u>BC 11760</u>				22) Mrs Robinson Lemonheads Di	iana's got it taped as royal	<u>spoof</u>	hits street By Tim Satchell THE Princess of Wales has obtained a				
21	<u>CB</u>	<u>SC 11762</u>				obtained a copy of the vide	eo version of Pallas 2, the	<u>spoof</u>	soap opera which pokes fun at the Royal Family and which will				
22	<u>CB</u>	<u>BE 1464</u>				Stallone, 46, s	says he is 'flattered' that a	<u>spoof</u>	of his Rambo films is being made. Charlie Sheen, who				
23	<u>CB</u>	<u>BE 1465</u>				Shots 2	, said: 'I'd be flattered if a	<u>spoof</u>	was made of one of my movies.' Travolta stays quiet				
24	<u>CB</u>	<u>BE 2549</u>			the C	onference on European Security and s	aid his speech had been a	<u>spoof</u>	. He wanted to show how bad things could become if the				
25	CB	F 8446				down bets on a Charles and	Diana enlit. Drama at TV	spoof	$S \Delta TIRIC \Delta L$ film producer Geoff Δ tkinson has been forced to hurriedly re-edit his				



...to cross-searching distributed resources...

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services

...and distributed web service orchestration

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My Input Plain Text Damals in Odessa war es sehr kalt. Wir fuhren jeden Morgen mit großen rappelnden Lastwagen über das Kopfsteinpflaster zum	nguage: German Sentences current Type: TCF Tokens F Version: 0.4		S German Named Entity med Entities: tuebadz8			-			
Done running tools.									



How does this work in the University of Oxford?

A collaboration between:

- IT Services
 - Oxford Text Archive, British National Corpus
- Oxford e-Research Centre
 - home for interdisciplinary research, technical R&D, expertise in e-infrastructures in other disciplines
 - BNCweb online service, and OxLangCloud service planned
- Humanities Division
 - users in English, Modern Languages, Linguistics and beyond
- CLARIN European Research Infrastructure Consortium
 - secondment of staff to work on European coordination



CLARIN: some lessons learned

Credit

- Specialist repositories embedded in user communities can offer facilities for doing things with data which generic repositories cannot
- Infrastructures can support bespoke facilities which are not sustainable or connected when run by individual research projects
- Ease of access can be enhanced by offering cross-repository services
- New types of research can be made possible by offering cross-repository services
- Cross-border authentication, authorization and licensing are not insurmountable barriers

Debit

- Research infrastructures are a new type of organization – their activities and their existence are potentially confusing and disruptive for existing institutions and practices
- Reaching and working with an enormous number of potential users in many communities is difficult



Read more...

CLARIN website: http://www.clarin.eu/

'CLARIN for beginners' 'Using large text collections for research' 'Text Encoding, text collections and the potential to transform the Humanities' 'Silos or Fishtanks?' http://blogs.it.ox.ac.uk/martinw/

'The Role of CLARIN in Digital Transformations in the Humanities'

Martin Wynne International Journal of Humanities and Arts Computing 7.1-2 (2013): 89–104 DOI: 10.3366/ijhac.2013.0083 Edinburgh University Press 2013



