

A Digital Humanities Approach to the Emergence of CULTURE as a Liquid Modern Word: Evidence From Synchronic and Diachronic Language Resources

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Abstract

As empirical approaches to the study of natural language based on digital technology, corpus linguistics and computational linguistics are two faces of the same coin, whose value lies in the attempt to integrate quantitative and qualitative aspects of linguistic analysis. This attempt has become all the more challenging in recent years as the language data at our disposal grows day by day. Indeed, the changing nature of language resources in the era of big data has inevitably also changed the research questions that it is possible to address (Hiltunen *et al*, 2017). The increase and variety of the data available has opened up new horizons, by empirically supporting research questions concerning social phenomena, or by providing new hints for tracking language change, as is the case with the novel discipline of Modern Diachronic Corpus-Assisted Language Change (Alessi & Partington, 2020). These new research areas are continually evolving and expanding also thanks to a growing number of easy-to-access resources and tools so that the fields of corpus linguistics, digital linguistics and digital humanities “overlap, intertwine and feed off each other when it comes to making use of the increasing variety of resources available for linguistic research today” (Nevalainen, Suhr and Taavitsainen, 2019, p.1).

It is against this background that the present article reports on the preliminary results of a corpus-based investigation into the process that has transformed the very specific material meaning of the word “culture” into the extremely elusive, liquid concept we are familiar with today. The analysis starts from the findings of earlier investigation of the lexico-grammar profile of the word “culture” based on contemporary synchronic corpus resources and

attempts further exploration of these findings on the basis of diachronic language resources, such as Google Books and the English Historical Book Collection.

Keywords: Culture, Ngram Viewer, Sketch engine, Synchronic corpora, Diachronic resources

1. Introduction

Sketching the “historical peregrinations” of the concept of culture in his *Culture in a Liquid Modern World* (2011), Bauman outlines the changing role of culture in society from “an agent for change”, to “a conservative force”, to an increasingly flexible and liquid concept “fashioned to fit individual freedom” (Bauman, 2011, pp. 1-17). Taking Bauman’s views on culture as a starting point, the present investigation tries to find evidence-based clues of the process that has transformed the very specific material meaning of the word “culture” into the elusive concept we are familiar with today. The basic assumption is that the process of semantic change which transformed a word originally referring to the concepts of tillage and husbandry (from the Latin *colere*) into a potentially polysemous word, accommodating a far wider range of meanings, is mirrored in changes in usage of this word, which in turn reflect changes in society.

The very choice for the word “culture” as a key word for the present investigation also owes much to Raymond Williams’ *Keywords*, and to his famous statement that culture is “one of the two or three most complicated words in the English language” (Williams, 1985, p. 87). By identifying “culture” as one of the key words of our times, Williams reminds us that culture used to be, in its early uses, the noun of a process: the tending of something, basically crops or animals. This meaning provided a basis for the important next stage of metaphorization, when the tending of natural growth was extended to signify a process of human development wherein the word “culture” came to be taken in absolute terms as signifying a process of refinement (Williams, 1985, pp. 87-93).

After tracing the key moments in the development of this word, Williams distinguishes three categories in modern usage:

- (i) the noun which describes a process of intellectual, spiritual and aesthetic refinement; e.g. a man of culture;
- (ii) the noun which describes the products of intellectual and especially artistic activity; e.g. Ministry of Culture;
- (iii) the noun which indicates a particular way of life, whether of a people, a period, a group, or humanity in general; e.g. Jewish culture.

While not immediately concerned with the tenets of research by Williams and his followers, who consistently engaged in discussing the evolution of “culture”, and similar key words, thereby contributing to the rise of what is now known as the field of cultural studies, this article follows Williams in pursuing an exploration of the ways the word “culture” is used in the English language. Indeed, in his introduction to *Culture and Society*, Williams states that his enquiry into the development of this word should be carried out on the basis of some kind of empirical evidence, i.e. by examining “not a series of abstracted problems, but a series of

statements by individuals” (1966, p. xvii). Furthermore, as later argued by the authors of *New Keywords*, Williams explored “not only the meanings of words, but also the ways people group or ‘bond’ them together, making implicit or explicit connections that help to initiate new ways of seeing their world” (Bennet *et al.*, 2005, p. xvii), an approach which bears striking similarities to the corpus-based approach adopted for the present research.

2. Sketches of CULTURE: Evidence From Synchronic Resources

The investigation carried out in the present article takes as a starting point the preliminary results of earlier research into the lexico-grammar profile of the word “culture” carried out using Sketch Engine, a corpus query tool that provides a one-page summary of the lexico-grammar patterns of a word from a given corpus (XXX, 2011; XXX 2014). Here, data from three synchronic corpora of English (the ‘traditional’ BNC, and the web-derived British Web 2007 and EnTenTen Corpora) will be compared, thus updating data from earlier research .

The table below reports the number of occurrences and the normalized frequency of the noun “culture” in the three corpora (Table 1).

Table 1. Occurrences of “culture” in three synchronic corpora of English

Corpus	BNC	British Web 2007	ENTENTEN 2021
Occurrences	10,078	163,646	6,781,682
Normalized frequency	89,71 per million	105,74 per million	110,12 per million
	0.009%	0.011%	0.011%

As a preliminary note, it should be stressed that while the number of occurrences computed for the noun “culture” in the three corpora is quantitatively comparable (nearly 0,010% in each corpus in terms of normalized frequency), these data inevitably include both cases in which “culture” is used with its general meaning in the humanities, which is the primary concern of the present analysis, and those in which it is used as a scientific term (e.g. *cell culture*). Unfortunately, the tools and resources used for the present research do not allow for *a priori* disambiguation between the two meanings; as a result, an attempt has been made – heuristically – to estimate the number of occurrences of the lemma “culture” in its scientific sense, by computing the number of occurrences of “culture” with “cell” or “bacteria” in their co-text. This was done using the filter option and setting a broad co-text (15 words to the left and to the right of the node). The results seem to indicate that in the BNC nearly 9,472 (2,46 per million) occurrences of “culture” co-occur with such words as “cell” or “bacteria” and can be related to its scientific meaning, against 2,499 (1,61 per million) in British Web 2007, and 102,868 (1,67 per million) in EnTenTen 2021. Further validation of these data has been attempted, at least for EnTenTen 2021, by computing the occurrences of “culture” in the subcorpora labelled as “Health” and “Science”, as these subcorpora were deemed more likely to contain texts featuring the ‘scientific’ meaning of culture. These occurrences amount to 132,845 occurrences (2.16 per million tokens), which represent 0.00022% of the whole corpus. The consistency of data from this restricted search is apparently confirmed by a computation of the collocates of “culture” in the two “Health” and “Science” which mostly

include scientific terms like “supernatant”, “medium”, “cell”, etc. (Figure 1).

Collocations CHANGE CRITERIA BACK TO CONCORDANCE

Word	Cooccurrences ?	Candidates ?	T-score	MI	LogDice ↓	Word	Cooccurrences ?	Candidates ?	T-score	MI	LogDice ↓
1 □ supernatants	785	6,512	28.02	15.77	7.53 ***	11 □ organisational	687	211,363	26.19	10.56	6.03 ***
2 □ supernatant	637	24,678	25.24	13.55	7.05 ***	12 □ serum-free	258	4,934	16.06	14.57	5.94 ***
3 □ vitro	1,272	281,758	35.65	11.03	6.65 ***	13 □ mammalian	436	112,676	20.87	10.81	5.86 ***
4 □ tissue	3,818	1,302,362	61.74	10.41	6.45 ***	14 □ flasks	249	24,277	15.78	12.22	5.70 ***
5 □ medium	5,318	2,074,425	72.86	10.21	6.30 ***	15 □ ATCC	207	11,038	14.39	13.09	5.56 ***
6 □ cell	10,075	4,125,556	100.29	10.14	6.28 ***	16 □ RPE	253	45,465	15.90	11.33	5.54 ***
7 □ sputum	355	21,881	18.84	12.88	6.23 ***	17 □ incubated	287	69,527	16.93	10.90	5.54 ***
8 □ Cell	1,567	565,113	39.55	10.33	6.20 ***	18 □ 24-well	186	2,358	13.64	15.16	5.49 ***
9 □ Tissue	460	83,027	21.44	11.33	6.13 ***	19 □ bacterial	677	377,537	25.99	9.70	5.44 ***
10 □ explant	291	4,244	17.06	14.96	6.12 ***	20 □ filtrate	185	10,663	13.60	12.97	5.40 ***

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Figure 1. Collocates for “culture” from EnTenTen2021 (only “Health” and “Science”)

As to the incidence of the scientific meaning of “culture” in this specific corpus, this is also evident in the Sketch Engine output, where the potential relevance to one or the other domain of the occurrences computed for each collocation is given below each collocate. As shown in Figure 2, the system computes potential relevance to the domain “Science” and “Health” especially for patterns including “positive/negative” as adjectives in predicative position, and for the collocation with “medium”.

verbs with “culture” as object	verbs with “culture” as subject	modifiers of “culture”	nouns modified by “culture”	adjective predicates of “culture”
foster ... foster a culture • especially: economy & finance & business	influence ... culture influences • especially: education • especially: travel & tourism • especially: reference/encyclopedia	popular ... popular culture • especially: arts • especially: education	shock ... culture shock • especially: education • especially: travel & tourism	supernatant ... the culture supernatant • especially: health • especially: science
promote ... promote a culture	shape ... culture shapes • especially: education	pop ... adjective pop culture • especially: culture & entertainment • especially: arts	war ... culture wars • especially: home & family & children • especially: politics & government • especially: multi-topic	negative ... culture negative • especially: health • especially: science
preserve ... preserve their culture • especially: travel & tourism	inspire ... inspired by the culture • especially: travel & tourism • especially: arts	American ... American culture • especially: arts • especially: education	clash ... culture clash • especially: culture & entertainment • especially: arts	positive ... culture positive • especially: science • especially: health
shape ... shape the culture • especially: education	evolve ... culture has evolved • especially: arts	pop ... noun pop culture • especially: culture & entertainment • especially: arts	religion ... culture religion • especially: education	alive ... culture alive • especially: travel & tourism
experience ... experience the culture • especially: travel & tourism	surround ... the culture surrounding • especially: travel & tourism • especially: arts	Western ... Western culture • especially: arts • especially: religion	medium ... culture medium • especially: science • especially: health • especially: news	superior ... culture is superior to • especially: religion • especially: blog
embrace ... embrace the culture • especially: travel & tourism	thrive ... culture thrives	Chinese ... Chinese culture • especially: education • especially: travel & tourism	reference ... pop culture reference • especially: arts • especially: culture & entertainment • especially: games	rich ... culture is rich • especially: education
celebrate ... celebrate the culture • especially: travel & tourism	encourage ... culture encourages	corporate ... corporate culture • especially: economy & finance & business	show more (1)	prevalent ... culture prevalent • especially: multi-topic • especially: news
cultivate ... cultivate a culture	collide ... cultures collide	Japanese ... Japanese culture		different ... culture is different
change ... change the culture	change ... culture has changed • especially: religion			
understand ... understand the culture • especially: education				

Figure 2. Word Sketch for the noun “culture” from EnTenTen2021

While the method described above cannot be considered totally reliable, the apparently negligible number of results for the supposedly ‘scientific’ meaning of “culture” in the corpus suggests that this aspect could be temporarily ignored in the following commentary of the data. Nonetheless, this is certainly an aspect which needs to be handled with care when pursuing further research on this topic.

Given the limited scope of this article, only three lexico-grammar patterns will be focused on

in the subsections below, namely: patterns in which “culture” is the object of transitive verbs; patterns in which “culture” is used as a modifier; patterns in which “culture” is followed by a prepositional phrase.

2.1 “Culture” as Object

When considering the list of verbs having “culture” as their object, it seems that according to data computed by the Sketch Engine for all the three corpora, the word “culture” has a consistent tendency to occur as the object of such verbs as “foster”, “promote”, “reflect”, “understand”, “change” (see Table 2).

Table 2. List of top 12 verbs having “culture” as object retrieved using Sketch Engine

BNC	BRITISH WEB 2007	ENTENTEN 2020
absorb	foster	foster
assimilate	experience	promote
foster	promote	preserve
transmit	change	shape
promote	embrace	experience
create	understand	embrace
change	celebrate	celebrate
reflect	strengthen	cultivate
respect	create	change
understand	reflect	understand
develop	preserve	influence
modify	embed	reflect

While these data are encouraging in showing that different corpora built in different ways (traditionally and by web-crawling) yield consistent results for the verb collocates of “culture”, thus testifying to a certain reliability of the semi-automated crawling process used to compile British Web 2007 and the EnTenTen Corpora, something interesting can be observed with reference to the changing position of some collocates. The collocates “foster” and “promote”, for instance, seem to gain prominence in the two more recent web corpora, when compared to the BNC, whereas “create”, and “reflect” decline. It is also interesting to consider how the verb “experience”, which does not appear in the top 12 list from the BNC, is one of the most significant collocates for “culture” in the other two more recent web corpora. By contrast, the patterns originating from the collocation of “culture” with such verbs as “assimilate”, “absorb”, “transmit”, which indirectly refer to power relations among cultures, appear to be unique to the BNC. This connects, as noted elsewhere (XXX, 2014, p.186), the position of the adjective “dominant” as one of the most collocates for “culture” in the BNC; “dominant”, it is perhaps worth stressing, is not found among the most frequent modifiers for “culture” in more recent web corpora.

As to the collocates common to the three data sets, previous research has already discussed how concordance lines for such pattern as *create+ culture* or *foster + culture* in the BNC and in British Web 2007 show a frequent co-occurrence with words relating to the socio-

economic domain, such as “staff”, “enterprise”, “job”, “work”; this, in turn, reveals that “culture”, in this context, has partially lost its original meaning of a process/product of refinement, as in the famous Arnoldian sense of “a pursuit of our total perfection, [...] the best which has been thought and said in the world”(Arnold, 1859, p.viii) and rather concerns a set of ideas/behaviours relating to a specific group in a specific context, like a workplace, company or organization – i.e. a new restricted meaning of “culture”, which in turns originates specific lexico-grammar patterns. (see also Section 2.3).

Special attention should be given to the emerging collocation of “culture” with “experience”. In this case the concordance lines provide evidence of the emergence of patterns that apparently reflect the anthropological/ethnographic meaning of culture. A more focused search for patterns including an adjective for “culture” (e.g. experience + ADJ + cultures) reveals a quite consistent collocation with adjectives like *new*, *different*, *other*, often followed by the plural form “cultures”, as seen in Figure 3 below.

I work, I also availed of the opportunity to travel around Mexico and **experience** its **culture** and richness. </s><s>My time on co-op was one of the most eventful and valuable experiences. This was important for me as I wanted to venture outward and **experience** new **cultures**, meet new people and see new places. </s><s>I'm working as a Business Development Coop, and also gives them the opportunity to "see the world" and **experience** other **cultures** and work environments. </s><s>It is also the best way of becoming fluent in a language and global partners to offer students unique opportunities to **experience** various **cultures**, grow in their faith, and engage the world around them. </s><s>The Global Exchange program offers students the opportunity to travel and **experience** different cultures. </s><s>Traveling with activity day and night, it's a great way to **experience** the local Catalan **culture** and see how tourism impacts the city. </s><s>This hour-long trip across the Pyrenees mountains gives students the chance to **experience** the local culture, taste traditional Spanish food, and learn about the history of the region. </s><s>I grew my knowledge of the Spanish language, **experienced** a new **culture**, and built skills around cross cultural communication. </s><s>As well, working in club activities and various events give a chance to **experience** directly different **cultures** as an international student. </s><s>Through those activities with more people, </s><s>But growing up, I also dreamt of traveling the world and **experiencing** different **cultures**. </s><s>At UFV, I get both. </s><s>I have a rich life with friends and family in rural areas, and also have the opportunity to travel and **experience** different cultures. </s><s>Tourism is a dynamic, global industry through which people **experience** the **culture**, heritage and environment of other countries, whether they are travelling for leisure or business. </s><s>A qualification also gives the graduate opportunities to travel and **experience** diverse **cultures**. </s><s>The area is constantly evolving to meet new trends and customer needs. </s><s>Crafts and activities. </s><s>Kids will have a fantastic time **experiencing** Japanese **culture** firsthand. </s><s>The Ginza Dori shopping arcade has tons of games and activities, clean water manufacturing facility and technology lab and **experiencing** the many **cultures** found in the United States. </s><s>"His Excellency DG Saisi is committed to giving Bob Casey on Friday, January 11. </s><s>Senator Casey visited to **experience** the **culture** of this employee-owned company and to hear about the value of employee ownership. </s><s>One of the most amazing things about travelling is that it allows you to **experience** new **cultures** and ways of life. </s><s>It's important to respect the traditions, beliefs and dreams of the local people. </s><s>Abroad provides students with the opportunity to visit new places, **experience** new **cultures** and learn new skills while earning KPU credits. </s><s>You can combine study with the opportunity to meet many people from around the world, **experience** different **cultures** and visit different cities in Canada. </s><s>International Business is a great course of study for students interested in international relations. </s><s>MA in International Relations, 2008/2009</s><s>If you want to **experience** a good **culture**, a good working environment, a good place to start your career, then this is the place to go. </s><s>One of our partner universities abroad, an excellent opportunity to **experience** the **culture** of another country at first hand, honing your language skills and undertaking a variety of international projects.

Figure 3. Concordance lines for patterns of co-occurrence of *experience + culture* from EnTenTen 2021 retrieved using Sketch Engine

These occurrences testify to new ways of conceiving of culture, whereby culture is considered more and more as something to be experienced, rather than learnt at schools or found in books.

Significantly, when comparing data from the three data sets under analysis, the emergence of patterns which are apparently unique to one or the other corpus can be identified, as is the case with the collocation of “culture” and “cultivate” in the pattern “cultivate a culture”, which only appears in the latest collection (EnTenTen 2021). Especially when considering the etymology of the word “culture” itself, this is an almost tautological pattern, apparently supporting a positive semantic prosody, with almost all occurrences featuring - in the right

co-text - terms with positive connotations (e.g., “inclusivity”, “philanthropy”, “non-violence”, and so on) as shown in Figure 4.

	Word	Cooccurrences ?	Candidates ?	T-score	MI	LogDice ↓	
1	cultivated	223	299,815	14.93	12.94	4.58	...
2	MOPS	3	3,471	1.73	13.15	3.40	...
3	inclusivity	17	56,849	4.12	11.62	3.15	...
4	Domi	3	5,588	1.73	12.47	3.11	...
5	philanthropy	29	120,710	5.38	11.31	2.91	...
6	academe	4	12,689	2.00	11.70	2.82	...
7	collegiality	4	13,641	2.00	11.60	2.75	...
8	risk-taking	8	39,754	2.83	11.05	2.52	...
9	inclusiveness	8	40,934	2.83	11.01	2.49	...
10	embraces	26	172,787	5.10	10.63	2.25	...
11	fosters	13	109,865	3.60	10.29	1.88	...
12	prioritizes	5	39,453	2.23	10.39	1.86	...
13	discipleship	7	59,631	2.64	10.27	1.81	...
14	Ethical	14	144,221	3.74	10.00	1.61	...
15	non-violence	4	37,048	2.00	10.15	1.61	...

Figure 4. Collocates for the pattern of co-occurrence of *cultivate + culture*

2.2 “Culture” as a Modifier

The list of nouns modified by the noun “culture” is opened, in the three corpora, by *shock*, a collocation which relates to a distinctively modern experience defined as “culture shock”, i.e. “the feelings of isolation, rejection, etc., experienced when one culture is brought into sudden contact with another, as when a primitive tribe is confronted by modern civilization” (*Collins Cobuild Dictionary*, online).

Other collocates in patterns where “culture” is a modifier indicate a difference between the BNC and the two web corpora under analysis. In the BNC, the collocates following “shock” mostly relate to the scientific meaning of culture, and include such terms as “supernatant”, “medium”, “dish”, “plate”. Besides these, an interesting collocate for this pattern in the BNC is “vulture”, in the phrase “culture vulture” – a phrase which gains particular prominence in the British Web 2007 corpus, where “vulture” immediately follows “shock”, only to fall back to a lower position in the EnTenTen2021 corpus (Table 3).

Table 3. List of top 10 nouns modified by “culture” retrieved using Sketch Engine

BNC	BRITISH WEB 2007	ENTENTEN 2021
shock	shock	shock
supernatant	vulture	war
medium	clash	clash
Gubenko	religion	religion
dish	medium	medium
vulture	Jowell	reference
religion	change	heritage
Lang	gender	tradition
youth	heritage	politics
plate	politics	vulture

It is also important to note that both the BNC and British Web 2007 include proper names (Gubenko and Lang, in the BNC, and Jowell in British Web 2007) in the list of noun collocates for “culture”, as a consequence of the prominence given in the computation of collocates to relatively rare words (see XXX, 2014, pp. 27-28), whose impact is felt less in the much larger web corpus EnTenTen. Also noteworthy is the prominent position of such words as “clash”, “religion” and, in EnTenTen 2021, “war”, which clearly reflect the re-proposition of contemporary culture struggles. As to “medium”, it can be observed that the incidence in the list of collocates for this pattern mostly relates to the scientific domain (“culture medium”) in both the BNC and British Web 2007, whereas in EnTenTen 2021 it partly results as a lemmatization of “media” in the report. Consistently, the topic attribution by Sketch Engine in the complete word sketch (see Figure 2 in Section 2 above) suggested Health, Science and also News as relevant domains for the collocation “culture medium”.

Regarding the collocation “culture shock”, whose prominence is common to the three corpora, one of the most frequent collocates for the whole phrase “culture shock” in the two web corpora is “reverse”, which originates the phrase “reverse culture shock” (see Figure 5).

WORD SKETCH

English Web 2020 (enTenTen20)



Get more space



culture shock 13,540x ...

culture noun > shock noun x

prepositional phrases usage patterns

adjective predicates of "culture shock"	modifiers of "culture shock"	"culture shock" and/or ...	nouns modified by "culture shock"	verbs with "culture shock" as object
immense	reverse	homesickness	homesickness	experience
overwhelming	homesickness	jetlag	loneliness	lessen
enormous	loneliness	lag	isolation	overcome
intense	lag	re-entry		suffer
inevitable	barrier	reentry		ease
normal	inevitable	loneliness		soften
real	experience	disorientation		reverse
	profound	barrier		encounter
	severe	overload		minimize
	isolation	dislocation		imagine
	huge	misunderstanding		minimise
	initial	isolation		

Figure 5. Collocates for the phrase “culture shock” from EnTenTen 2021 retrieved using Sketch Engine

On the contrary, “reverse culture shock” is a form that was not even attested in the BNC, probably because the experience itself had not yet been fully conceptualized or, possibly, the discourse community to which this kind of experience was relevant was probably under-represented in the corpus. Thus, more recent web corpora like British Web 2007 and EnTenTen do not only provide evidence of this relatively new linguistic formation, but in doing so they point to the emergence of a new social and psychological condition, resulting from a change in society itself. The very existence of a “reverse culture shock” is certainly related to novel ways of experiencing mobility and migration, which entail continuous dislocations and relocations, as some of the collocates in the “culture shock AND/OR” pattern in Figure 5 indicate.

2.3 The Pattern “Culture” + Preposition

Finally, some significant patterns emerge from the word sketch for “culture” when focusing on those in which “culture” is followed by a prepositional phrase. For the purposes of the present article, only two patterns will be considered, namely those in which “culture” is followed by the prepositions “of” and “within”. As already noted elsewhere (XXX, 2011; 2014), the pattern (a) *culture + of* seems to turn the word “culture” into an extraordinarily capacious and inclusive category that can be used for anything or, as Bauman would argue, “to fit individual freedom” (Bauman, 2011, p. 13). Indeed, while some collocates for this pattern might seem to suggest only a relatively negative semantic prosody (Stubbs, 1996, p. 106), owing to collocations with words bearing negative connotations (like “racism”, “poverty”, “dependence” in the BNC, or “secrecy”, “blame”, “impunity”, “consumerism” in British Web 2007), there is ample evidence that today the pattern can equally accommodate

positive notions, like “peace”, “openness”, “community”, “excellence”, as shown in the list of collocates in Figure 6.

<u>pp_of-i</u>	<u>12095</u>	<u>1.6</u>
secrecy	<u>127</u>	7.75
openness	<u>153</u>	7.62
blame	<u>58</u>	6.53
impunity	<u>35</u>	6.38
entrepreneurship	<u>35</u>	5.96
dependency	<u>49</u>	5.9
peace	<u>217</u>	5.72
consumerism	<u>23</u>	5.6
spin	<u>36</u>	5.41
complacency	<u>20</u>	5.33
disbelief	<u>20</u>	5.3
innovation	<u>107</u>	5.22
disrespect	<u>14</u>	5.1
individualism	<u>16</u>	5.01
accountability	<u>39</u>	4.96
violence	<u>111</u>	4.95
tolerance	<u>35</u>	4.94
suspicion	<u>30</u>	4.89
excellence	<u>50</u>	4.88
microorganism	<u>13</u>	4.84
cynicism	<u>14</u>	4.76
deceit	<u>13</u>	4.75
respect	<u>120</u>	4.73
fear	<u>98</u>	4.7
learning	<u>153</u>	4.62

Figure 6. Collocates for the pattern *a culture of* from British Web 2007

The word “culture” here seems to have become a neutral term that can keep the company of many different words: a culture of secrecy and openness, a culture of corruption, and a culture of accountability, a culture of violence, a culture of peace, and even “a culture of ‘buy now pay later’”. As suggested by the various collocates for the pattern *a culture of*, this lexico-grammar pattern really has the power of turning culture into a sort of *vox media*, a liquid modern word that can be used for anything.

Furthermore, the concordance lines for the pattern *a culture of* include many phrases in inverted commas (over 5000 in EnTenTen 2021), which seem to create a culture virtually ex-nihilo, reducing culture to little more than an attitude (Barker, 2003, xix), as in the examples

reported below:

...ss them briefly. First there is often **a culture of** "we can do it ourselves". Working in part : refusal to take up employment. Is **a culture of** "working poor" better than a culture of reflection, enquiry and dialogue, and **a culture of** "no blame" experimentation and challenging want of this hope, especially where **a culture of** "the here and now" leaves no room for own by and to everyone. Creating **a culture of** 'allowing' seems to me to be the only optimal insurance companies who criticise **a culture of** 'bigger is best' when it comes to buying ssing social issues and engendering **a culture of** 'collective responsibility' and the promotional assessment and the development of **a culture of** 'continuous improvement'. The QSTG id esterners are in danger of creating **a culture of** 'disaster tourism' which actually makes

Figure 7. Concordance lines for the pattern *a culture of* from British Web 2007 (Sketch Engine)

This tendency of the pattern *a culture of* to accommodate all sorts of meanings is apparently confirmed when considering data from the more recent EnTenTen 2021 corpus. When computing data for the pattern *a culture of* + *NOUN*, the most salient results still display a variability which contains opposites like "openness/secrecy" and which suggest a negative semantic prosody for the term (e.g. "a culture of impunity", "a culture of bullying", "a culture of lawlessness") along with collocates with terms having positive connotations like "philanthropy", "inclusivity", "inclusiveness", "inclusion", and "peace" (by far the most frequent collocate in R1 position for this pattern).

1	<input type="checkbox"/> impunity	944
2	<input type="checkbox"/> openness	814
3	<input type="checkbox"/> innovation	3,146
4	<input type="checkbox"/> secrecy	481
5	<input type="checkbox"/> philanthropy	335
6	<input type="checkbox"/> excellence	1,132
7	<input type="checkbox"/> continuous	1,863
8	<input type="checkbox"/> entrepreneurship	441
9	<input type="checkbox"/> inclusivity	203
10	<input type="checkbox"/> peace	4,153
11	<input type="checkbox"/> accountability	841
12	<input type="checkbox"/> inclusion	1,022
13	<input type="checkbox"/> inclusiveness	148
14	<input type="checkbox"/> wellness	420
15	<input type="checkbox"/> teamwork	233
16	<input type="checkbox"/> dependency	291
17	<input type="checkbox"/> bullying	316
18	<input type="checkbox"/> lawfulness	97
19	<input type="checkbox"/> preparedness	198
20	<input type="checkbox"/> transparency	522

Figure 8. Collocates of "culture" in the pattern *a culture of* + *NOUN* retrieved from EnTenTen 2021 using Sketch Engine

Focussing on the *culture + within* pattern computed by Sketch Engine as a prominent pattern (542 occurrences, 4.2 per million) especially in British Web 2007, this mostly occurs in sentences where "culture" is the object of such verbs as *create*, *foster* or *promote* with a frequent co-occurrence with words relating to specific contexts like an "organization", a "department", an "institution", the "NHS", and so on, as shown in Figure 9. Phraseology of this kind confirms the idea that the world "culture" today is often used you to indicate a set of

ideas/behaviours relating to a specific group in a specific context, like a workplace or a company – a restricted meaning of “culture” which can well be interpreted in terms of the concept of “small culture” (Holliday 1999: 237-264).



Figure 9. Collocates of “culture” in the pattern *culture + within* retrieved from British Web 2007 using Sketch Engine

3. Evidence From Diachronic Resources

Starting from these preliminary observations on the lexico-grammar behaviour of the word “culture” in corpora representative of contemporary usage, a new research question followed. To what extent can these patterns retrieved be considered as typical of contemporary usage only? And if they are, how and when did they emerge? Is there other information that could be gained from further investigations via diachronic resources?

3.1 Google Books

3.1.1 Ngram Viewer

A preliminary attempt to answer these questions was querying the Google Books database, through Ngram Viewer, an extremely limited and yet fascinating tool which allows one to read line charts representing n-grams (i.e. continuous sequences of text) from the digitized books in the Google Book collections (Note 1). The data can be accessed through a free web-based interface that enables relatively complex queries, supports wildcards, POS-tagged search, and case-sensitive queries, etc. This tool is commonly used in what has come to be known as “culturomics”, a research trend which aims “to observe cultural trends and subject them to quantitative investigation” on the basis of data obtained from Google Books (Jean-Baptiste Michel *et al.*, 2011, pp. 176-182). This approach is definitely controversial, especially from the perspective of corpus linguistics, which is engaged in more theoretically sound and qualitatively reliable empirical research. A very convincing overview of its limitations is found in McEnery and Baker (2016, pp. 11-17). Nonetheless, in the specific case under analysis, it seems that information retrieved from such imperfect resources and limited tools can still be used as fingers pointing to interesting phenomena that might deserve further investigation using more appropriate resources and tools. For instance, faced with the prominence and significance of the pattern *a culture of* as typical of the lexico-grammar

profile of the word “culture”, as described on the basis of data on contemporary usage, Ngram Viewer was used to try and see whether the pattern had always been there, or had it somehow emerged only at a certain point in time.

Indeed, a search in Google Books using Ngram Viewer apparently suggests that the pattern emerged in the late 19th century, with most occurrences in the biological field, when it was referred to the discovery of bacteria. Books dating back to the 1890s, for instance, generally contain phrases like “a culture of the bacillus of this disease” and similar expressions (see Figure 10).

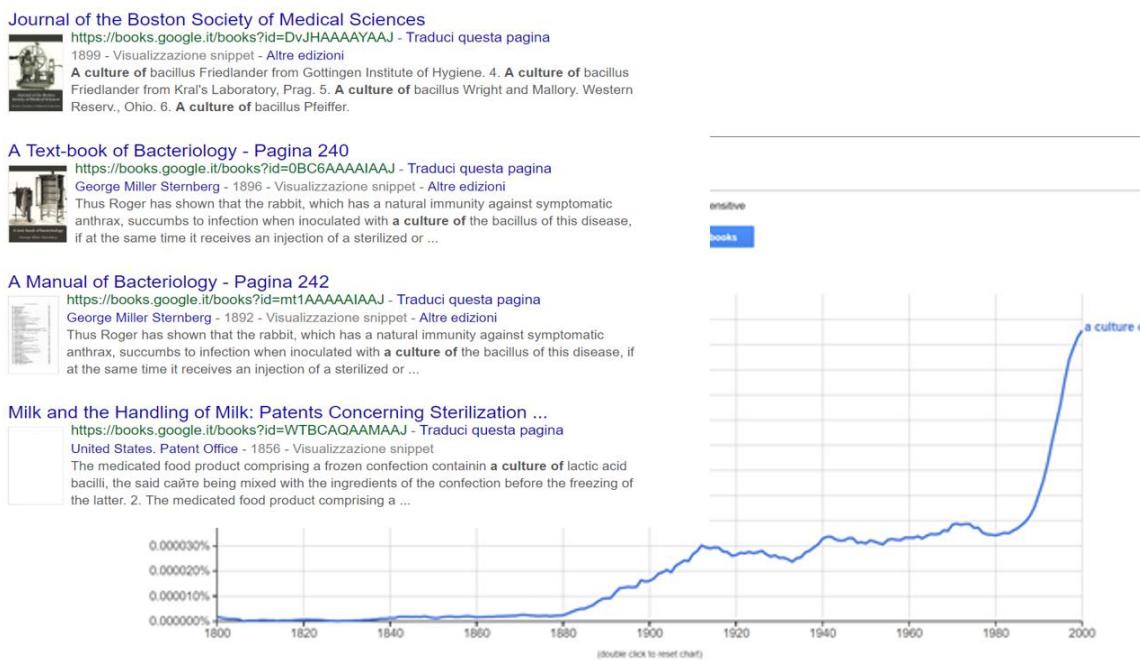


Figure 10. Frequency of occurrence of the pattern *a culture of* in Google Books (British) using Ngram Viewer

Uses of the phrase “a culture of” apparently had a steady increase between the 1880s and the 1920s, as shown on the graph in Figure 10, but it is only around the 1990s that there was a dramatic surge in usage for this pattern, possibly connected with the growing tendency to use culture as a *vox media* devoid of any specific meaning as in the examples reported above, in section 2.3.

Similarly, the emergence of the phrase “cultivate a culture (of)”, which was briefly commented on in section 2.1., seems to be a relatively new formation, as shown in Figure 11. It is only in the 1080s that this collocation almost suddenly appears.

Google Books Ngram Viewer

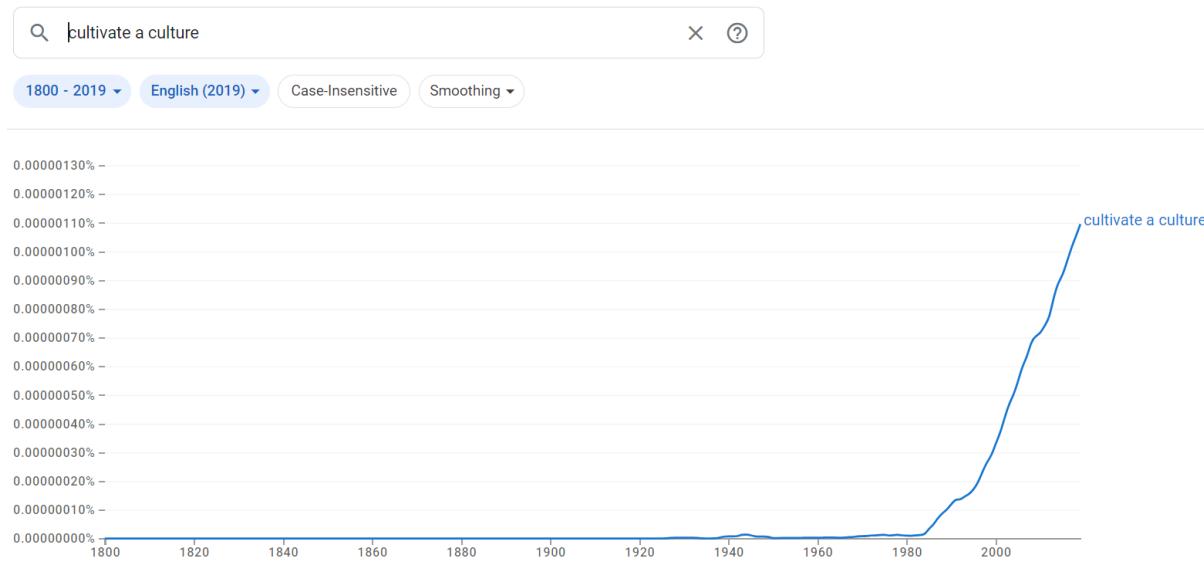


Figure 11. Frequency of occurrence of the pattern *cultivate a culture* in Google Books (British) using NGram Viewer

The emergence of “culture shock” is also worth mentioning, a phrase apparently prominent in the three synchronic corpora mentioned in the previous sections, which Ngram Viewer locates in a specific moment in history. i.e. the late 1950s:

Google Books Ngram Viewer

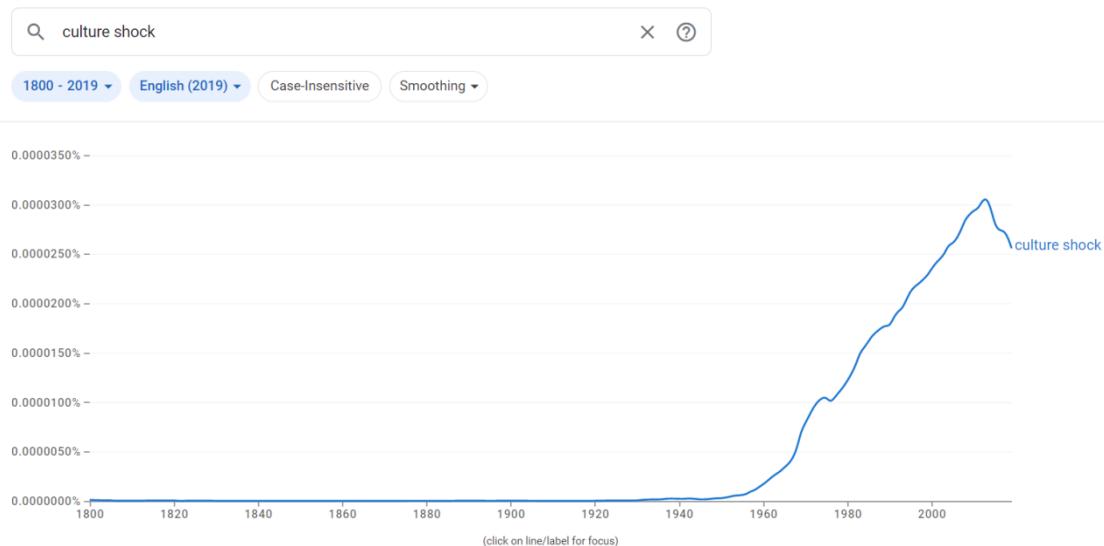


Figure 12. Frequency of occurrence of the collocation *culture shock* in Google Books (British) using Ngram Viewer

As a consequence, also “reverse culture shock” seems to have appeared virtually ex-nihilo in the 1960s, with a steady increase in the number of occurrences until the first decade of the new Millennium (see Figure 13), when it probably started to loose topicality.

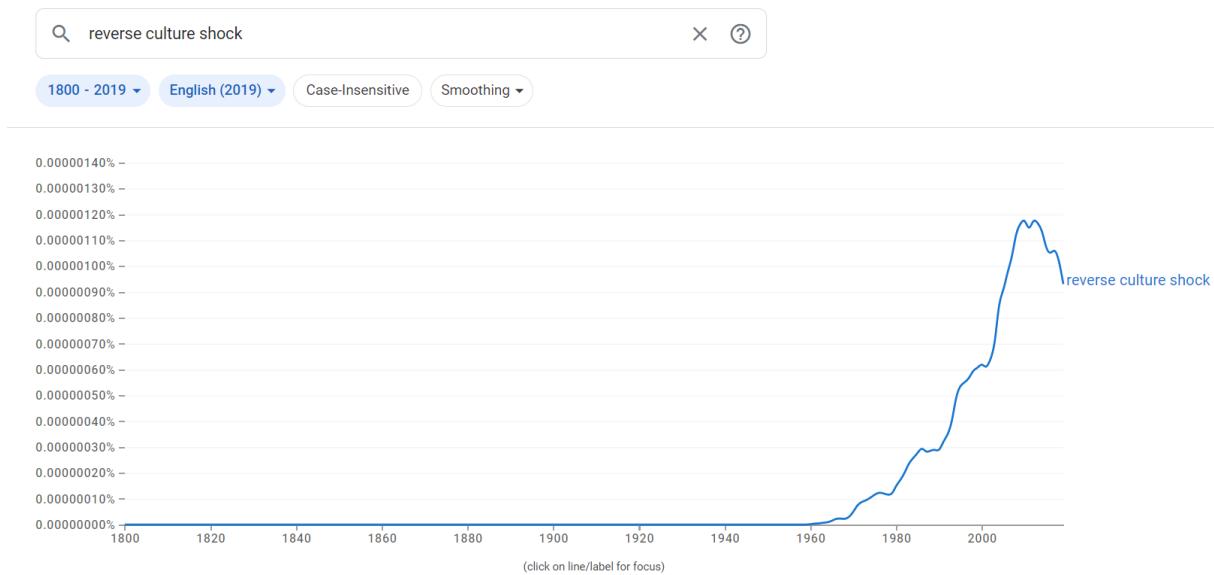


Figure 13. Frequency of occurrence of the collocation *reverse culture shock* in Google Books (British) using NGram Viewer

A quick survey of the Google Books page corresponding to the first part of the rising curve in the results from Ngram Viewer, indicates that “reverse culture shock” might be particularly relevant to the American context, with specific reference to the experience of returning Vietnam veterans, as in the screenshot reported in Figure 14.

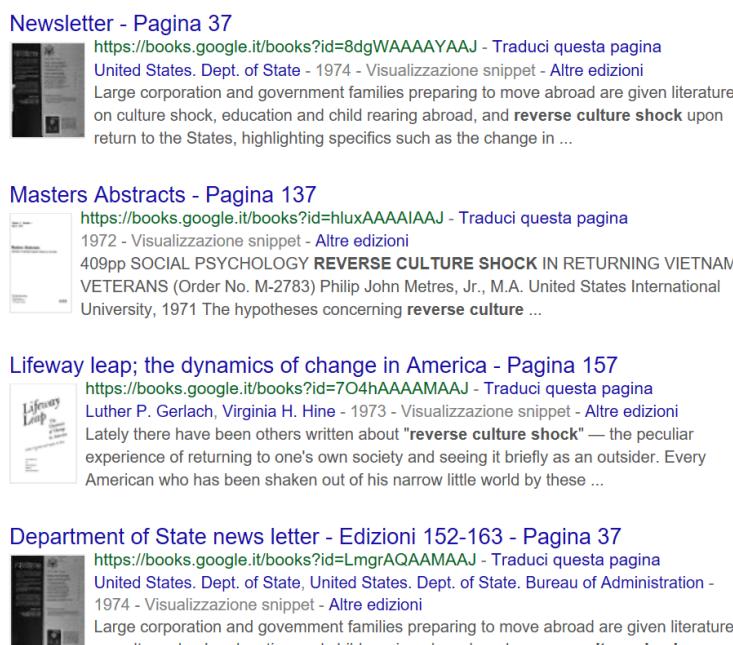


Figure 14. Sample of Google Books results for “reverse culture shock” between 01/01/1800 and 31/12/1976

Also interesting is the possibility of having a big picture in terms of changing behaviour of different lexico-grammar patterns. This is the case of the diverging fortunes of the two

patterns *experience a different culture* and *understand a different culture* which seem to confirm that culture is increasingly seen as something to be experienced rather than to be learnt or cognitively appreciated, as the verb *understand* would suggest (Figure 15).

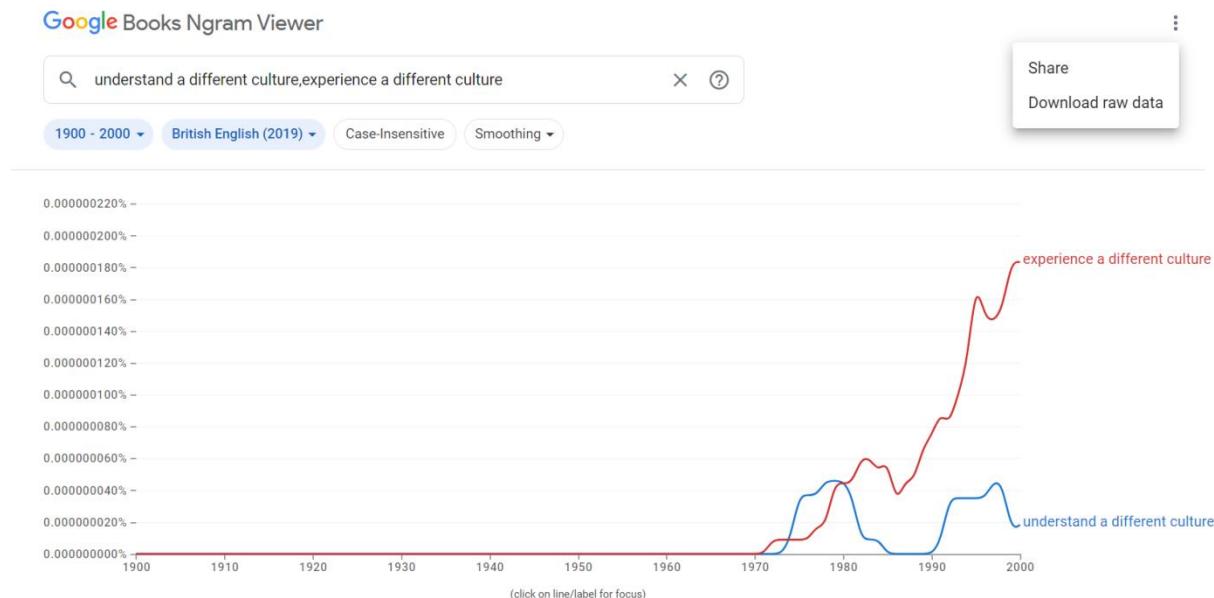


Figure 15. Frequency of occurrence of the patterns “experience/understand a different culture” in Google Books (British) using NGram Viewer

3.1.2 Google Books at BYU Corpora

Besides using Ngram Viewer, the present research has also tried to explore the benefits of using the interface to Google Books data available through the well-known Corpora website (Note 2). Created by Mark Davies at Brigham Young University, this interface allows more refined queries than Ngram Viewer, also supporting the comparison of data from different sections of the corpus (Davies 2014).

Frequency data are here visualized as shades of blue corresponding to the higher or lower frequency of a collocation. By way of example, in the screenshot in Figure 16, the output from the Google Books (British) Corpus for the time-span 1800-2000 confirms at a glance that the collocation “culture shock” appeared between the 1950s and the 1970s and has dramatically grown in frequency since the 1980s, as data displayed for each decade apparently indicate. The same screenshot provides evidence of the emergence and decline of the collocation of *culture* with *refinement*, which has a peak of incidence precisely in the years around and immediately following the publication of Arnold’s seminal *Culture and Anarchy* (1860).

CLICK ON A WORD/PHRASE OR NUMBER BELOW TO SEE IT IN GOOGLE BOOKS [HELP..]			[NOTE ON GOOGLE BOOK EXCEI																											
	WORD(S)	CHARTS	TOTAL	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000							
1	medium	G	11094								18	212	333	218	251	209	461	420	1074	1478	1420	1847	3153							
2	media	G	6288								11	224	351	165	163	232	230	237	653	690	655	738	1939							
3	civilization	G	4420	10	17	29	30	31	39	65	157	115	142	77	217	245	263	301	400	332	413	547	990							
4	shock	G	3387																8	1	10	93	535	935	1805					
5	civilisation	G	2844			14	17	14	46	89	270	219	201	146	137	117	146	152	233	149	255	258	381							
6	sensitivity	G	2629																1	8	67	188	337	445	1583					
7	refinement	G	2170	7	14	22	25	34	47	171	262	332	326	116	168	107	71	100	97	69	52	57	93							
8	ethnicity	G	1194																	6	38	332	818							
9	encourages	G	847																2		1	8	11	23	582					
10	modernity	G	725																4	5			3	22	240	451				
11	subculture	G	702															1			2	10	44	69	172	404				
12	ethos	G	626															1	1		3	5	22	187	407					
13	filtrates	G	528															11	9	36	34	125	64	98	57	94				
14	narcissism	G	399																		49	125	225							
15	filtrate	G	397															1	2	5	2	18	21	76	36	118	24	94		
16	consumerism	G	396																		9	104	283							

Figure 16. Collocates of “culture” from Google Books (British) using BYU Corpora interface

As to the pattern *a culture of*, this tool confirms evidence obtained with other tools, showing how the pattern was virtually non-existent up to mid-19th century and started growing dramatically at the end of the 20th century (Figure 17).



Figure 17. Chart display for the frequency of occurrence of the pattern “a culture of” from Google Books (screenshot detail)

Scrutinizing the time span covering the three centuries between 1500 and 1800, the pattern again seems to be non-existent in this data set. The corpus only includes 4 occurrences for “a culture of”, all around 1640 and referring almost invariably to Hobbes’ *Leviathan*, a work which contains one of the earliest explicit references to the extension of the meaning of culture to the realm of education as in Figure 18.

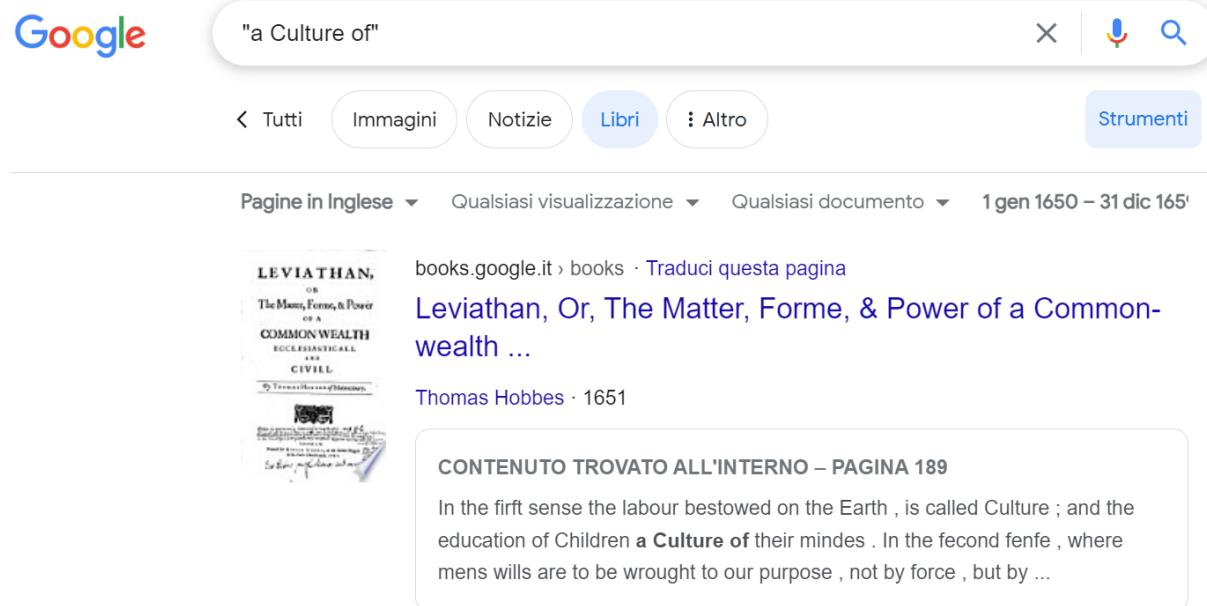


Figure 18. Google Books page pointing to T. Hobbes, *Leviathan* (1651 ed.)

In this case, as seen in Figure 18, the tool's output directly leads to the Google Books page linking to the complete work by Hobbes, where the reader can browse the entire quote, which is a very interesting testimony of the emerging metaphorical usage of “culture” with reference to the education of children and of their minds

...the external signs appearing in the words and actions of men are called worship; which is one part of that which the Latins understand by the word *cultus*: for *cultus* signifieth properly, and constantly, that labour which a man bestows on anything with a purpose to make benefit by it. Now those things whereof we make benefit are either subject to us, and the profit they yield followeth the labour we bestow upon them as a natural effect; or they are not subject to us, but answer our labour according to their own wills. In the first sense the labour bestowed on the earth is called culture; and the education of children, a culture of their minds. (Hobbes, 1651, p. 189)

3.2 English Historical Books Collection

A further attempt at casting a backward look in order to envisage the changing face of the word “culture” over time was finally made by using data from the English Historical Books Collection, a historical corpus collection containing books published in the UK and the USA between 1473 and 1820, now available through Sketch Engine.

While limited in scope, the data provides clear evidence of the fact that the noun “culture” was not particularly frequent in written Early Modern English, as this corpus only has 1,750 for the noun “culture”, out of a total of 2361 occurrences (2.39 per million).

As a matter of fact, a comprehensive word sketch for “culture” from the English Historical Books Collection (Figure 19) mostly foregrounds the etymological meaning of “culture” related to “tillage” and “husbandry”, especially in the pattern “culture and/or N”.

WORD SKETCH

English Historical Book Collection (EEBO, ECCO, Evans)



culture as noun 1,750x ...

object_of

subject_of

modifier	and/or	pp_of	pp_obj_of
drill	tillage	rice	mode
of the drill culture	culture and tillage	the culture of rice	mode of culture
turnip	husbandry	silk	susceptible
where the turnip culture is	culture or husbandry	for promoting the culture of silk	incapable
lkilful	civilization	vine	and incapable of culture
my hand By lkilful culture in thy Britain	and extend their culture and civilization in Africa	indigo	method
mental	manure	flilk	species
the effect of mental culture , in calling	manure and culture	the culture of flilk	in every new species of culture ; and it
garden	dressing	tobacco	system
careful	population	cane	subject
early	of culture and population	bean	has been the subject of less culture and fewer experiments
by early culture	refinement	potato	capable
eafy	planting	glebe	is capable of culture
of eafy culture	soil	flax	admit
extenfive	education	maize	object
prudent	culture and education		He multiplies the objects of culture ; besides corn
did prepare With prudent culture the young floots			want noun
diligent			want of culture
diligent culture of			want verb
moral			and barren for want of culture
moral culture , and			

Figure 19. Word Sketch for “culture” from Early English Book Online (EEBO) accessed through Sketch Engine

Nonetheless, there is also evidence of collocates pointing to the emerging metaphorical meaning like “civilization”, “improvement”, “refinement” and “education” in the second column from the left, and collocations such as “mental culture” and “moral culture” in the first column on the left).

Indeed, data from this corpus show how the metaphorical meaning of culture slowly emerges, century after century, from rare occurrence in the 1400-1499 section of the corpus, where the word “culture” is occasionally related to the Latin word *cultus* in such phrases as “the culture and honour of theyr god” or “the culture and worshypynge of false ydolles”, to higher frequency of occurrence in the following century (1500-1599 section), which includes lines like “it cannot receaue fpyrytuall culture nor tyllage”, or “they neglect the care and culture of their soules”, further expanding the collocational span of “culture” (Figure 20).

46	<input type="checkbox"/>	① 1587 ; doo grow there in manie places of themselues without culture and tillage; so if a man come thither of set purpose to m	
47	<input type="checkbox"/>	① 1577 as was wont to be, by reason that as the lande is better cultured by the Christians, aswell by the fellyng of wooddes and	
48	<input type="checkbox"/>	① 1587 e rich and fertile places of Scotland lie wast and void of culture for feare of their inuasion.</s><s>Not far from the Suliw;	
49	<input type="checkbox"/>	① 1530 1 a sharpe edge / to receyue & turne the erthe whan the culture hath cut it / There be two rougue staues in every plough	
50	<input type="checkbox"/>	① 1540 r into the forowe.</s><s>Howe be it, the fettinge of the culture helpeth moche.</s><s>Somme plowes haue a bende o	
51	<input type="checkbox"/>	① 1567 vise by policie & wise foresight to make him husband & culture his own soile, that for want of seasonable tillage was ba	
52	<input type="checkbox"/>	① 1540 set on the ferther ende of the share beame.</s><s>The culture is a bende pece of yren fette in a morteys in the myddes	
53	<input type="checkbox"/>	① 1557) muche moyfted wt drynke, it cannot receaue spyrytuall culture nor tyllage, nor bring forth the necessarie frutes of the fo	
54	<input type="checkbox"/>	① 1530 for depnes.</s><s>The fote is one / the fettinge of the culture of a depnes is an other / & the thyrde is at y· plough ta	
55	<input type="checkbox"/>	① 1577) lay open, and vndefended in the wyde fielde, and the culture of it not had in so much estimation, as to place them nig	
56	<input type="checkbox"/>	① 1599)f men nowe a daies.</s><s>They neglect the care and culture of their soules, but the lustes of the flesh they make pro	

Figure 20. Concordance lines for “culture” from English Historical Books Corpus (1600-1699) retrieved using Sketch Engine

As to the pattern in which “culture” is followed by a prepositional phrase introduced by “of” (“culture of”), in this corpus the pattern is in most cases followed by crops, as in the phrases “the culture of rice”, “the culture of silk”, “the culture of vines”. It is also worth stressing that the pattern “a culture of” is virtually non-existent in the corpus (with only 3 occurrences in total) whereas the most common pattern is the one introduced by the definite article “the culture of + N”, with 562 occurrences, almost variably collocating with agricultural species (Figure 21).

Collocations							CHANGE CRITERIA	BACK TO CONCORDANCE					
	Word	Cooccurrences ?	Candidates ?	T-score	MI	LogDice ↓	Word	Cooccurrences ?	Candidates ?	T-score	MI	LogDice ↓	
1	<input type="checkbox"/> Orange-Trees	7	176	2.65	16.09	8.28 ***	11	<input type="checkbox"/> adapted	17	5,826	4.12	12.32	6.45 ***
2	<input type="checkbox"/> indigo	8	525	2.83	14.71	7.91 ***	12	<input type="checkbox"/> potatoes	4	1,013	2.00	12.76	6.38 ***
3	<input type="checkbox"/> silk	15	1,553	3.87	14.05	7.86 ***	13	<input type="checkbox"/> turnips	3	632	1.73	13.03	6.36 ***
4	<input type="checkbox"/> rice	18	2,197	4.24	13.81	7.74 ***	14	<input type="checkbox"/> filk	8	2,778	2.83	12.30	6.29 ***
5	<input type="checkbox"/> hemp	9	990	3.00	13.96	7.57 ***	15	<input type="checkbox"/> cane	5	1,583	2.24	12.44	6.26 ***
6	<input type="checkbox"/> vines	12	2,478	3.46	13.05	7.02 ***	16	<input type="checkbox"/> Melons	3	754	1.73	12.77	6.22 ***
7	<input type="checkbox"/> tobacco	11	2,291	3.32	13.04	6.98 ***	17	<input type="checkbox"/> oats	3	858	1.73	12.58	6.11 ***
8	<input type="checkbox"/> maize	3	226	1.73	14.51	6.96 ***	18	<input type="checkbox"/> flax	5	1,992	2.24	12.11	6.00 ***
9	<input type="checkbox"/> Indigo	3	415	1.73	13.63	6.65 ***	19	<input type="checkbox"/> fugar	6	3,282	2.45	11.65	5.68 ***
10	<input type="checkbox"/> cotton	8	2,081	2.83	12.72	6.63 ***	20	<input type="checkbox"/> grain	12	7,264	3.46	11.50	5.65 ***

Rows per page: 20 1–20 of 197 |< < 1 / 10 > >|

Figure 21. Collocates for the pattern “culture of” from the English Historical Book Collection retrieved using Sketch Engine

However, it is precisely in the pattern “culture of” (with or without determiners) that data from this diachronic corpus makes us see first-hand the development of the metaphorical meanings of “culture” in terms of its collocation profile. Especially in the dataset for the period 1600-1699, the analysis of concordances and collocates for “culture” shows the emerging coexistence of the literal agricultural meaning (as in “Culture of the Ground”) side by side with a new ‘spiritual’ metaphorical meaning, often in such phrases as “culture of the mind(e)” (see Figure 22).

tails	Left context	KWIC	Right context ↑
1627 /, and Fumitorie.	</s><s>Neither can this be, by Reason of the	Culture of	the Ground, by Plowing, or Furrowing; As some Herbs, and Fl
1611 ey followe the excercis of the body, that they neglect not the	culture of	the mind.	</s><s>From hence growes ciuility, and power, to me
1625 ed goddesse were as necessary and beneficall to the labour, or	culture of	the minde, as the bleffings of Ceres or Segetia were to tillage,	
1634 e skilfull, and then that the seed be good: so in the tillage and	culture of	the minde, the nature and disposition of the Child doth resem	
1622 omes of that Land or Place, whereby either out of knowledge,	culture of	the mind, or by some glorious Action performed, they haue be	
1622 nto which we are beholden, for whatsoeuer dependeth on the	culture of	the mind; it followeth, that who is nobly borne, and a Scholler v	
1622 red, by how much the sacred Arts haue greater interest in the	culture of	the mind, and correction of manners.	</s><s>Wherefore, your
1667 a Crop answerable to his Seed and Labour: and in the nobler	cultures of	the Mind, we justly exact of our Pupils to let their manners atte	
1665 life, worthy to be preferred before all honours & dignities: This	culture of	the ground, and planting and ordering of Fruit-trees, Occasion	
1687 cation.	</s><s>There is a fit resemblance between the natural	Culture of	the Earth and the moral of our Minds: Three things are requisi
1698 to render this Knowledge familiar to them.	</s><s>Without this	culture of	the Mind no Person cou'd have easily and soon perswaded us
1692 e are not often to be met with: For we usfully observe, that the	Culture of	the mind, as of the Earth, doth deliver it from the Barrennels o	
1692 e Tree will draw &c	</s><s>Enquiries concerning the Vse and	Culture of	the Kitchen-Garden and Winter-Greens
			</s><s>I WhatRoots

Figure 22. Concordance lines for the pattern “culture of” from English Historical Books Collection (1600-1699) retrieved using Sketch Engine

Finally, it is also interesting to note that it is again according to data from the English Historical Book Collection that we can find evidence of a later stage, namely in the 18th century, when *civilization* appears among the most salient collocates for “culture”, suggesting a completed process of semantic change.

	Word	Cooccurrences ?	Candidates ?	T-score	MI	LogDice ↓	
1	silk	17	1,553	4.12	12.85	7.53	...
2	rice	18	2,197	4.24	12.43	7.33	...
3	tobacco	14	2,291	3.74	12.00	6.93	...
4	drill	5	351	2.24	13.23	6.49	...
5	civilization	6	742	2.45	12.41	6.48	...
6	vines	10	2,478	3.16	11.41	6.38	...
7	indigo	5	525	2.24	12.64	6.36	...
8	turnip	4	183	2.00	13.84	6.31	...
9	adapted	17	5,826	4.12	10.94	6.25	...
10	skilful	7	1,607	2.64	11.52	6.22	...

Figure 23. Collocates of “culture” from English Historical Books Collection (1700-1799) retrieved using Sketch Engine

4. Conclusion

Using different resources and tools to obtain a general picture of significant patterns of usage in the evolution of language is certainly fascinating, but definitely not enough. The data analyzed in the present article seem to confirm that there are resources and tools that can support the investigation of a huge amount of data, pointing to interesting research areas that could be further analyzed with more refined *ad hoc* tools. The resources and tools used for the present investigation provide no more than quick-and-dirty data to chart the emergence of phenomena and trends in language use but, it goes without saying, it is necessary to be extremely cautious before drawing conclusions, if any, from investigations like these. Nonetheless, while not entirely reliable, especially for diachronic investigation, the tools and resources explored in the present article can still play a role in what has come to be known as cultural analytics (Manovich 2020) and in contemporary approaches to historical linguistics, where quantitative investigation carried out on raw big data, more often than not, prompts suggestions for a more in-depth, qualitative investigation (Hilpfert and Gries, 2016, p. 36). With a caveat: a rewarding exploration of these data can only come as the result of teamwork in the context of a multidisciplinary approach in the larger thriving research field of the Digital Humanities.

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Resources and tools:

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Google Books (British English). Retrieved from <http://googlebooks.byu.edu/x.asp>

Sketch Engine. Retrieved from <https://www.sketchengine.co.uk/>

Notes

Note 1. <https://books.google.com/ngrams/>

Note 2. <https://www.english-corpora.org/>

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