GENOVA UNIVERSITY PRESS

Publifarum
https://riviste.unige.it/index.php/publifarum

Pensare l'Antropocene: prospettive linguistiche, letterarie e artistiche

A cura di Chiara Fedriani e Chiara Rolla

Transition, transmission, translation: compounding in the Digital age. A corpus-based reading of Anthropocene and its language *cloud*

Laura Santini

Per citare l'articolo
Laura Santini, «Transition, transmission, translation: compounding in the Digital age. A corpus-based reading of Anthropocene and its language 'cloud'», *Publifarum*, 41, 2024, p. 34-63.

Abstract

This essay investigates the socio-cultural implications of newly formed compounds, blends, and multiword sequences in the English language, particularly those arising from socio-economic transformations. It examines whether these lexical innovations create a persistent framing that shapes our ideological perspectives and our discussions surrounding Nature. In light of the significant changes induced by emerging technologies and devices, we draw upon Sapir's assertion that the vocabulary of a language reflects, though may not entirely capture, the physical and social realities of its speakers. The study focuses on contemporary English words rooted in Nature, analyzing their meanings, figurative framing, and diachronic evolution via a corpus-based quantitative and qualitative analysis. Special attention to the term 'cloud' allows to trace its metamorphosis from compounds such as 'cloud cover' in meteorology to 'cloud space' in computing. This exploration includes an analysis of three key processes: transition, i.e., mapping the shift across semantic fields; transmission, i.e., how innovative concepts are defined borrowing from Nature and filtering through a technological lens; and translation, i.e., intralingual rewording (JAKOBSON 1969), encompassing metaphoric and metonymic expansions and conceptual reconfigurations.

Riassunto

L'articolo affronta le implicazioni socio-culturali delle parole composte, e altre forme di composizione lessicale, incluse sequenze di più parole, di recente coniazione emerse nella lingua inglese, in particolare quelle nate in seguito o all'interno di trasformazioni socio-economiche. L'analisi propone una riflessione su come queste innovazioni lessicali possano o meno creare una cornice persistente capace di modellare le nostre posizioni ideologiche e le nostre discussioni attorno alla Natura. Alla luce dei cambiamenti significativi, indotti dalle nuove tecnologie e da dispositivi innovativi di utilizzo diffuso e quotidiano, si prende spunto da Sapir secondo cui il vocabolario di una lingua riflette, anche se non in modo completo, le realtà fisiche e sociali della propria comunità di parlanti. Lo studio si concentra su alcune parole del nostro contemporaneo in lingua inglese che sono radicate nel lessico della Natura, analizzandone i significati, la cornice figurativa e l'evoluzione diacronica tramite un'analisi quantitativa e qualitativa basata su corpora. Un'attenzione particolare è riservata al termine 'cloud', che consente di tracciare la sua metamorfosi da composti come 'cloud cover' in meteorologia a 'cloud space' nell'ambito dell'informatica. Un'analisi di tre processi chiave viene presentata: transizione, cioè la mappatura del cambiamento attraverso i campi semantici; trasmissione, cioè come i concetti innovativi vengono definiti attingendo dall'ambito della Natura filtrato attraverso un'ottica tecnologica; e traduzione, cioè la riformulazione intralinguistica (JAKOBSON 1969), che comprende espansioni metaforiche, metonimiche e altre riconfigurazioni concettuali.

…but the clouds of the sky…when
the horizon fades…or a bird's sleepy
cry…among the deepening shades...
Samuel Beckett, …but the clouds…

1. Introduction

As Sapir argued, «the vocabulary of a language» may or may not fully reflect the «physical and social environment of its speaker» (1912/2001: 14). By this Sapir aimed at distinguishing between an ideally complete vocabulary able to map any and all «fauna or topographical features» (Ib.) of a country and a more selective vocabulary that can «be looked upon as a complex inventory of all the ideas, interests, and occupations that take up the attention of the community» (Ib.). A key concept in Sapir's statement is «the attention of the community» that clearly matches with the interest(s) such community is focused on. If we look at the last four decades (1980-2020), it is hard to deny that the advances within the IT and digital communication sectors have significantly influenced our socio-cultural environment, capturing a substantial portion of our attention across various cultures and regions. New technologies and devices have exerted a profound and pervasive impact on numerous aspects of human life (e.g. robotics in health and the arts) and societal behaviour (e.g. mobile phones act as all-in-one devices effectively turning people into cyborgs as they constantly use them for speaking, writing, checking emails, reading the news, and other activities). This influence aligns predictably with Sapir's argument as it is evident in the creation of new English words and multiword sequences – also labelled multi-morphemic sequences to acknowledge the phenomenon across different lingua-cultures (PETERS 1983; see also THEAKSTON & LIEVEN 2017). According to Christiansen and Arnon «[t]he new millennium […] has seen a shift toward construing multiword linguistic units not as linguistic rarities, but as important building blocks for language acquisition and processing» (2017: 542). The degree to which this lexical productivity has acknowledged the ecological crisis and the anthropocentric footprint remains ambiguous. As argued by Trampe «language and world can be regarded as mutually interrelated» (1991/2001: 233). However, not only is «a linguistic representation of the real danger […] often missing» (TRAMPE 1991/2001: 234), but the new coinages

exploit, as a source, a range of words that belong to the Nature domain thus diminishing or altogether obscuring the actual portrayal of the ecological crisis threat via opaque multiword strings. A tendency that Jung identifies as «an ideologically centred utilitaristic anthropocentrism: thinking in mere category of usefulness […] developed particularly in the wake of industrialization» (1996/2001: 275). In this context, the present essay is based on the sampling of some of the current English source words, originally referring to Nature[1], that were forged into new lexical items that are «so evidently secondary in formation» (SAPIR 1912/2001: 16). It is aimed at discussing aspects of their meaning and diachronic evolution, that is, investigating matters of:

- transition: from one semantic field to another;
- transmission: defining something novel by adopting a technological perspective on Nature;
- translation: intralingual and/or re-wording (JAKOBSON 1969), e.g., via metaphoric or metonymic expansions and conceptualisation thus operating on framing[2]. Most importantly NOUN-NOUN compounds[3] especially metaphor- and metonymy-based compounds (also labelled headless, exophoric or opaque combinations) can engage each linguistic item in complex ways and relations within the multiword lexical unit «depending on where metaphor or metonymy acts upon the constructions: the modifier, the profile determinant, the relation between the two constituents of the compound, or the compound as a whole» (BENCZES 2005: 181).

The core questions being: What are the socio-cultural implications of new compounds, blends, and/or multiword sequences? Can lexical items, born out of socio-economic change, trace a specific persistent framing? Where are novel collocations (multiword expressions), blended words and compounds taking us ideologically, when they make us - to rephrase an often-quoted line by Lévi-Strauss (1962) - think (and talk) with animals and/or Nature?

Among the samples, particular attention is devoted to the evolution of collocations and compounds based on the source word ‘cloud’ - e.g., from ‘cloud cover’ in meteorology to ‘cloud space’ in computing – compounding being considered «the

universally fundamental word formation process» (LIBBEN 2006: 2) and one of the most productive types in English anyway (ALGEO 1991). The paper begins by discussing newly coined multi-morphemic sequences derived from the source domain of Nature, then transitions to a corpus data analysis that examines a diachronic shift in frequency of the word "cloud" as used in climate and weather forecasting discourse compared to its metaphorical use within compounds and collocations in various IT-related texts. Data from dictionaries and online lexicographic references alongside a corpus-based approach are the methodological tools adopted to analyse compounding and read frequency shifts across different corpora within different genre and discourse domains, enabling us to observe what combined forms under investigation give priority to, i.e., 'cloud computing' against 'cloud cover' or 'cloud formation/pollution'.

1.1. Industrial and digital era compounding: borrowing from Nature

Social and new media are increasingly relying on a new parlance, that is, a manner of speaking which is *natural* (endemic/common/typical) to these synthetic environments: it is a seemingly new-ish vocabulary often based on pre-existing words, resulting from semasiological changes[4] (cf. GRZEGA 2002), many of which rely on the biological – i.e., both organic and inorganic matter – figuratively expanded. Borrowing lexical items from the semantic field of Nature has been popular for a long time even though, in the last decades, as Roig-Marín has shown in her «taxonomy of cyber-blends» (2016: 3), the cyber world has gained ground and popularity in contributing to new coinages, featuring for example 'flog' (<fake + blog), 'sneakernet' (<sneaker + network), 'webinar' (<web + seminar), 'webjack' (<web + hijack).

Despite such trend, within the semantic field of Nature, the animal world lexicalisation has been long fertile in forming compound words out of metaphorical utilization and activation (STIBBE 2012; COOK 2015; KIEŁTYKA 2019) across time and cultures. Change and innovation have triggered such productivity in language for centuries. A historical example, within the first industrial revolution in England, can be 'pig iron' – nowadays, 'cast iron' – a compound word conceptually presenting a major shift in production and resulting from a metaphoric look-a-like association. Coined in the early 1800s, 'pig iron' emerged as charcoal iron production intensified and a new cast house was devised: a «two runner systems» which «looked like a line of piglets suckling their mother»

(WAKELIN, RICKETTS 1999: 18), an adult female pig or 'sow'. Many more could be the examples of how we *talk with* animals, but what is possibly more interesting for the current argument is to see how this 'talking/thinking with' animals unfolds in multiword sequences. In particular, the way they "incorporate a variety of semantic relations between constituents" (LIBBEN et. al. 2020: 337) and their semantic transparency versus their semantic compositionality (Ibidem), more extensively investigated within metaphorical and/or metonymic compounds by Benczes (2005; 2006). Adopting source words referring to animals seem to show a broad range of semantic combinations between components – be they metaphor or metonymy relations or both. Let us analyse, for example, the nouns 'donkey-engine' or 'donkey-boiler' and 'birdglasses' (first example 1900 – OED). The first two compounds (1858) refer to «A small steam engine, usually for subsidiary operations on board ship, as feeding the boilers of the propelling engines etc.» (OED) therefore both 'boiler' and 'engine' are meant in their propositional meaning, while 'donkey' is activating the ANIMALS ARE MACHINES conceptual metaphor. The compound 'birdglasses' refers to binoculars for watching wild birds, thus 'bird' is used prototypically and is attributive to the other (mass)noun 'glasses' which is a metonymy based on the contiguity offered by the word 'lens' in the two optical devices (PART FOR WHOLE). The relationship between 'bird' and 'glasses' is definitely more complex as compared to lexical items within other multiword forms such as 'sunglasses', 'prescription glasses', or 'multiplying glasses'. In the compound 'sunglasses', reference is to an optical tool for humans to wear in order to shield their eyes from the sunlight or glare; 'birdglasses' refers to an optical tool that cannot be worn and does not shield human eyes; rather, such optical instrument can only be held by hand and is meant to enhance human's sight across distance. As a result, in the NOUN-NOUN compound, 'bird' is not a hyponym of the head element 'glasses' as for instance 'apple' in 'apple tree', 'fish' in 'fishmonger' or 'ball in 'basketball'. Looking into a more recent, digital age compound 'nerd bird', that is, «a flight to or from a high-tech hub, especially Silicon Valley» (earliest occurrence 1995)[5], a completely different relation can be observed between the two nouns. As a matter of fact, they are both opaque: 'bird' is a metonymy (INSTRUMENT FOR ACTION) and 'nerd' is also a metonymy (PART FOR WHOLE) a slang word, short for 'computer nerd' (1982, OED), expressively identifying someone within

the Silicon Valley's tribe pursuing «an (obsessive) interest in, or […] extremely knowledgeable about, computers, and […] often regarded as lacking other interests or knowledge, boringly studious, socially inept, etc.» (OED).

As discussed by Lehrer, often neologisms «involve word play, such as puns and allusions» (2003: 370) because the intended perlocutionary effect is to «catch the hearer's attention» (Ibidem); for example, the blended word 'enviropig'[6], (<environmental + pig), introduced in 1999, may be a case in point as it was also acknowledged as a trade name referring to «a transgenic pig that produces environmentally friendly manure»[7] - developed by Canadian scientists at the University of Guelph. The word 'pig' may be understood literary or as a metonymy (PART FOR WHOLE) referring in particular to pig-waste or manure, while the clipping 'enviro' stands for 'environmental or environmentally friendly' that is quite a vague attributive to 'pig' as it may convey different ideas that range from reducing the impact of pig farming on the environment to improving farming conditions for pigs; from reducing the amount of their waste to modifying the pollutants in their waste. This is a case of pragmatic meaning, as Wray puts it, «the string becomes associated with one of its logically possible meanings and from that point on […] other meanings are simply not considered» (2002: 73). The Enviropig carried such name as it could better digest and process phosphorous (a water pollutant) so the compound is a hyponym that refers to a genetically modified pig. However, depending on who discusses the genetically engineered hog, at least another compound has been circulating: critics of genome editing in organisms have dubbed the pig 'Frankenswine' and, through such label, foregrounding some sort of monstrosity, they campaigned against its breeding.

Oftentimes, English neologisms based on pre-existing lexical items recombined via blends, collocations and compounds enter our vocabulary as somewhat familiar. Semantic transparency and compositionality are, though, crucial features in compounding. Libben refers to the former as «deceptive simplicity» (2020: 337) since compounds are simple morphological phenomena – which accounts for their popularity and fertility in new coinages – but may not be as simple when it comes to accessing their meaning and their functions. Playing on figurative expansions and/or associations of pre-existing lexical items, they may be used to seek efficiency in communication. But are they effective or transparent enough for hearers? What

framing of Nature do they propose? Among the «several unconnected functions» (WRAY 2002: 93) formulaic sequences perform, namely «speak fluently, express identity, organise text and help the hearer to understand», they also fulfil a manipulative function. According to Wray, what may «seem like altruism» (2002: 95) and appears as merely downplaying the hearer's processing effort, should be regarded from the point of view of the speaker's motivation and as uttered in the speaker's interest «since the intended effect of the utterance is to create a situation beneficial to the speaker» (2002: 95) not to the hearer.

Let us focus on how Nature is portrayed and consider for example the following compound noun, 'dead tree edition'[8]. It refers to «the paper version of an online newspaper, magazine or journal»[9]. What should be inferred from such three-word compound? Labelling it colloquial, the OED traces 'dead tree' back to 1991 and sets it within computing: «of or designating print media, as opposed to electronic media». What seems to emerge beyond the objective attempt at distinguishing the two media is a negative connotation as the 'dead tree' modifier component undoubtedly links paper-based publications with intense tree felling within paper manufacturing and relative high paper consumption; hence a value-loaded negative conceptualisation is subtly shaping the compound and promoting anything electronic or digital as more modern and efficient, possibly more eco-friendly, than whatever is traditionally paper-based. Expectedly (or not), the framing that shapes the use of such compound is still the anthropocentric one in spite of the fact that there is a double-standard applied to evaluate the two productive sectors, whereby the energy and fuel required for the digital world goes unmentioned, while a critical eye is cast on paper manufacturing as eco-dangerous and old-fashioned. Thus, the digital media realm, clearly the 2000s new technology, emerges as appealing and positively seen as better – i.e., safer, faster, cleaner.[10] New coinages may thus serve specific narratives within the same old capitalocentric frame (MOORE 2015), as in this case, but might even be somewhat meaning-concealing, as Lehrer argues relative to blends in his psycholinguistic research.

> what is unusual about most new blends and other trendy neologisms is that they DON'T increase efficiency. In fact, they create more effort to interpret – at least at first, until

> readers and hearers have figured out what the source words are and what they mean. (*capitalization as in the original* - 2003: 369).

Thus, the present investigation aims at «questioning the stories that underpin our current unsustainable civilisation, exposing those stories that are clearly not working, that are leading to ecological destruction and social injustice» (STIBBE 2014: 117). Questioning compounds and how they dismiss Capitalocene, its weight on the planet eco-system, may offer a pathway into exploring what role Nature plays in current times in English (also as a Lingua franca) and may provide insights into both the language and the social and ideological stances towards Nature that it reflects.

Among some of the (relatively) recent interesting new coinages of the digital age based on semasiology, there are compound and blended words such as 'astroturfing' (figurative meaning, 'paid/fake grassroot support to products, policies, events', first identified in 1993 by the OED[11]); collocates such as 'natural/organic search results'[12] (not yet listed in the OED); and more compounds, e.g. 'server farms' (earliest use in 1991 according to the OED), 'cloud storage', 'cloud computing' or simply 'the cloud', as well as 'human cloud'[13], all entertaining a strong if complex relation with Nature and/or the biological environment, i.e., organic and inorganic matter and creatures. What kind of change are we to perceive? If we accept the Wray's argument that «Human communication is a product not only of what we can do but also what we prefer and need to do» (2017: 569), maybe we can and should undo collocations and compounds to learn more about where our attention is drawn or how it is stuck to what we prefer as a world view via both their structure and their use (STUBBS 2001) possibly by investigating corpora diachronically.

As briefly shown, on the one hand, «thinking with animals» has been well liked in lexicography as the relationship between humans and animals has been under focus for a long time (cf. COOK 2015 for a literature review). On the other hand, less attention has been paid to the relationship between humans and the climate and/or the weather, i.e., more broadly Natural elements, until the emergence of climate change/crisis discourse. In the late 18th and early 19th century, learning more about Meteorology – the weather: clouds, winds, rain, currents, storms etc. – was pivotal on the way to industrialisation and progress. However, within the current digital ITC innovation, it seems less of an issue to engage with the *matter*, that is, the material

aspects – including raw materials – or factors and outcomes involved in producing and operating digital devices, though all new technologies bear a heavy dependence on minerals, energy production and consumption, and all sorts of infrastructure both on land and in the sea[14]. In *New Ways of Meaning*, Halliday warned us against tracing a clear-cut, transparent relation between constructing meaning and historical contexts.

> Semogenic processes – processes of constructing meaning – cannot be understood outside of their historical contexts; but neither can they be *derived from* these contexts by any simple relation. Let us put it this way: language is at the same time a part of reality, a shaper of reality, and a metaphor for reality. (1990: 180)

As shapers of reality, the new linguistic items entering current vocabulary are, as already noted, either untransparent to be catchy and/or manipulative via metaphor or metonymy relations between constituents that allow for a broader choice of what speakers typically need to make salient. But what reality is/are emerging and brought to the foreground by these new words? And what is sent to the background, hidden, made opaque or lost? As argued by Chris Otter, «The Anthropocene is clearly important to think with» (2018: 570). However, maybe attempts at 'talking with' such mindset can be counterbalanced by attempts at thinking with (as well as thinking out of) or away from such framing. In the following, a tracing of an anthropocentric view or development is presented by observing and analysing some compounds and or collocations between the 1980s and the 2020s.

2. Transition and transmission within compounding via corpus-based analysis

Typically, new collocates, compounds and blended words can result from emerging socio-cultural behaviour - as with 'astroturfing' - or from scientific research findings and/or innovation – e.g., 'pig iron' or 'enviropig'. In such creative attempts, some sort of transition in the way the world is framed is to be expected as well as a «tendency to denaturalise our communicative systems, our language-world-systems» (TRAMPE 1991/2001: 235).

Occasionally, the new coinage is transparent, but often it is not, as discussed above. For instance, according to the OED, the combining form 'eco-' is adopted both to shape

adjectives and nouns in compounding with the sense 'ecological and ——' (OED), e.g., among adj. eco-friendly, eco-historical; (nouns) eco-calamity, eco-crisis, eco-vandalism. However, words opening with 'eco-' do not share the exact same meaning the combining form seems to convey. As a matter of fact the Merriam-Webster dictionary provides two definitions for 'eco-', «1: habitat or environment, *ecospecies*; 2: ecological or environmental, *ecocatastrophe*».

A further aspect to be considered is the connotation of individual components of a multiword sequence: for instance, the two nouns 'eco-home' and 'eco-bling'[15] are respectively conveying positive and negative connotation because of their head noun, 'home' (positive connotation) and 'bling' (negative connotation). Such recognisable connotations in new formulaic sequences may, however, be altered or critically challenged in context (cf. the case of 'caremongering' in SANTINI 2023) – e.g., as shown in a sample sentence from the Collins English Dictionary referring to the use of 'eco-bling': «Detractors have called such features eco-bling but the new eco-homes will not be such an easy target»[16] (*Times, Sunday Times* (2012).

When dealing with novel formations, meaning in context and/or expanded sense can be better appreciated through corpora sampling, including dictionary corpora as in the case of the adjective 'eco-historical'. Out of eight sample sentences featuring an 'eco'-adjective, the OED offers two for 'eco-historical' both within academic papers: the earliest by Laura Thompson (1949) and the other by Jason W. Moore (2003).

1949	**2003**
In a relatively short time, from the eco-historical viewpoint, there emerged, on the basis of the ancient biotics, a new eco-cultural structure.	At the root of this ecohistorical difference between capitalism and feudalism is the role of commodity production in the two systems.
American Anthropologist vol. 51[17]	*Theory & Society vol. 32*[18]

Table 1: OED: eco-, *a.*

Two research fields are represented: anthropology and «world environmental history» that Moore introduces as a new field, i.e., «the study of human relationships through

time with the natural communities of which they are part, in order to explain the processes of change that affects that relationship» (HUGHES 2009: 4). Essentially the two authors appear engaged in diachronically discussing «the relations of organic species, including man, to one another in environmental context» (THOMSON 1949 footnote 3: 253) within what has also been labelled a «total ecological viewpoint» (Ibidem). However, while Thomson tends to use the word 'ecological' in a more denotative perspective which keeps a balance among the various component of a biotic system, i.e., plants, animals, and humans; Moore is often «denaturalising» (TRAMPE 1991/2001) the word meaning and mostly uses it to cite Immanuel Wallerstein's specific approach, thus metaphorically expanding the scope of the combined form towards what is beneficial to specific human socio-economic settings. Corpora «constituent texts» (MOON 2010: 197) may, as these brief examples show, increase novel formulaic sequences intelligibility not only by providing a better insight into their presuppositional pool (lexical cohesion and word chain), but also by shedding light on the speaker's scope and stance and what all this suggests about their usage.

3. Translation (intralingual): from 'cloud(s)' to 'the cloud'

The word 'cloud', in the OED 'inherited from Germanic' and in its main extant meaning «a visible mass of condensed watery vapour» (II.3.a in OED[19]), has been used in English since 1300. From its principal sense within meteorology (weather) and other geophysical sciences (soil science), 'cloud' has been metaphorically transferred into new interrelated semantic fields, telecommunications and computing as shown in Figure 1.

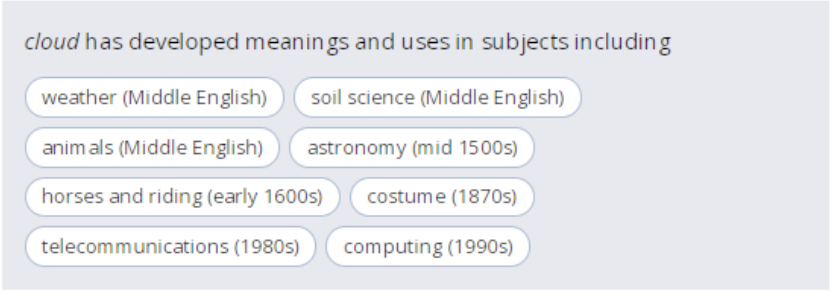


Figure 1: The word 'cloud' and its main semantic fields (OED)

The source word sense has been expanded and, atypically, made distinct in ITC and computing by the addition of the determiner ‘the’, so ‘the cloud’ stands out from the countable ‘cloud(s)’. As meaning is expanded metaphorically, one feature of the source word (cloud) is selected and made more salient, while other features are discarded or hidden. This is what is going to be discussed with reference to ‘cloud’ in the following paragraphs along with the emergence of the new sense and its context(s), that is, relying on Corpora «constituent texts».

3.1. The cloud as in ‘the public network cloud’ or ‘cloud computing’

According to the OED, ‘cloud’ gained a distinct new sense as an individual lexical item in a document in the field of telecommunications in 1989 to be retrieved in the multiword string «the public network cloud».

> It [is] especially capable of virtual net management, in which—to use the lightning bolt analogy—some user-transparent routing and transport is taking place through the public network cloud. (Network World 19 June 47/1 – source OED).

From a head position in the collocation or three-word compound «the public network cloud», almost ten years later in 1996 (OED), the word moves into computing and is mainly attributive in what is currently the well-known widespread compound, ‘cloud computing’ – included in the OED as an «additional sense» of the word ‘cloud’ in 2012, when it started to be used to represent networks «operated by a telecommunications service provider, used in routing data between different local networks» (OED).

Other online sources confirm the earliest entry of ‘cloud computing’ in the mid 1990s, e.g., Wikipedia refers to «the use of the ‘cloud’ metaphor to denote virtualized services» and points to its usage in 1994, when it was adopted «by General Magic to describe the universe of "places" that mobile agents in the Telescript environment could go». Up to the late 90s, the metaphorical meaning of ‘cloud’ in the telecommunications and ‘the cloud’ as in ‘cloud computing’ plays on two aspects of the source word: its being ungraspable both physically and visually (too complex to be defined); its being in an ever shifting relationship with other items, clearly not types of minerals, vapours, particles but mostly network and devices; and its being somewhere out there in the sky in an unidentifiable location.

In its transemiotic translation, that is, visually, 'the cloud' has been in the IT imaginary for a while[20] and is still a valid communication icon: «The image of a cloud is often used to represent such networks in diagrams» (OED). Among cloud diagrams across various documents, one of the earliest is to be found in a paper describing Telescript, namely "Mobile agents" by J. White (1996) that contained several of such iconized variations, such as the one presented here below in figure 2, 3 and 4.

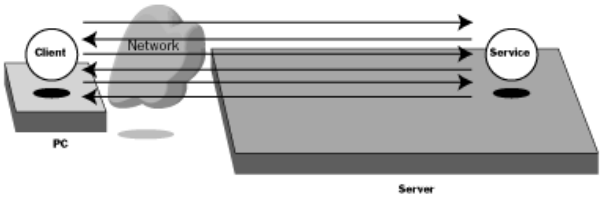
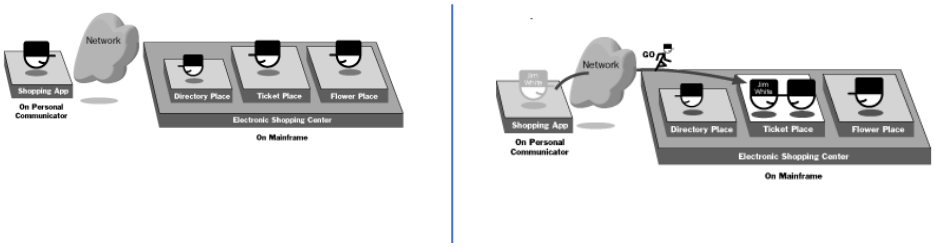


Figure 2: a diagram showing Telescript and the network cloud



Figures 3 and 4: two diagrams showing how Telescript models communicating applications as a collection of agents via the cloud[21]

The cloud icon is a metaphor activating the concept of a complex structure/architecture that is made up of several components and subcomponents like clouds in the sky would. There are two features the iconic image makes salient in the diagram: complexity (of structure and shape) and multiplicity (of relations among components) – the former feature is to be appreciated in the way the cloud icon is drawn as a suspended 3D form (with its own shadow) and as an in-between body that can also be accessed (Fig. 4). What no longer seems salient, in the above diagram, is the 'far away' or 'somewhere out there' idea; and the relative impossibility of identifying its location. The network cloud is positioned among other main items (PC,

client, Server, Service, Agents). The cloud icon is also a metonymy that stands for the word it expresses in the diagram, i.e., 'network cloud'.

The Word Spy online dictionary moves the use of the compound 'cloud computing' forward of about two years, to 1996, and defines it as «Data storage, applications, processing, and other computing services delivered remotely via the Internet or similar network».[22] Such definition is based on a confidential document (November 14, 1996) shared within CompaQ Computer corporation which features the compound both in its main title "Internet Solutions Division Strategy for Cloud Computing", and on page 3: in the subtitle "Internet cloud will have substantial impact on CompaQ customers"; as well as in a diagram depicting the 'internet cloud' within a stylised cloud-like shape.

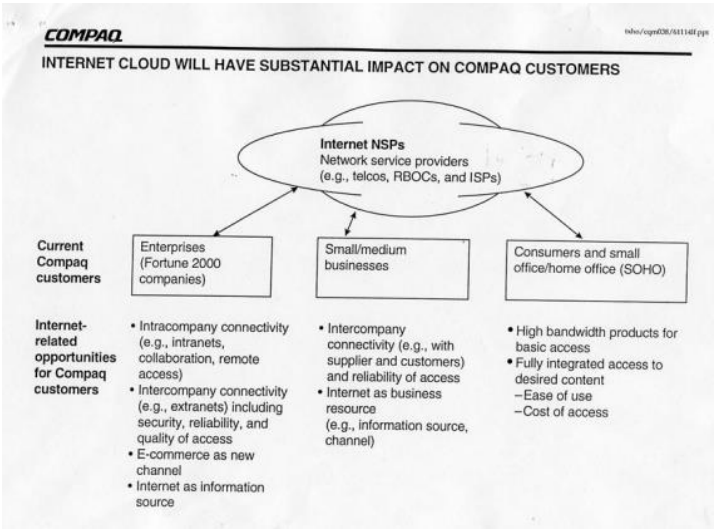


Figure 5 - Internet Solutions Division Strategy for Cloud Computing, (1996: 3).

In addition, Word Spy lists a much later variant (earliest entry in 2008), that is, 'fog computing' defined as «a Data storage, applications, processing, and other computing services delivered from nearby devices rather than from the cloud». Two significant observations warrant discussion: first, this newly formed metaphoric-based compound is derived from the same semantic field as 'cloud' (meteorology/weather); second, the primary feature of 'fog' – clouds that «form at or near the earth's surface» (OED) – is its 'closeness', which is made salient to serve as main descriptive characteristic contrasting with the distal conceptualisation of 'cloud computing'. As Word Spy conveys in a note:

> The "cloud" in cloud computing implies that the data and services are, in a sense, "far away" from the person or device requesting them. However, since a fog is really just a cloud that's near to the ground, the "fog" in fog computing implies that the data and services are "close to" the requesting user or device.[23]

The closeness v. distance relation established by 'fog' and 'cloud' has more prominence as instrumental to distinguishing the relation between the two *cloud*-based compounds, while there is less focus on the two previous salient concepts, i.e., complexity and multiplicity.

The internet dictionary netlingo features two combined forms based on the source word 'cloud' – which is listed as "a.k.a. the cloud", that is, 'cloud computing' and 'cloud capitalist'[24] – and provides an intersemiotic translation (fig. 7).

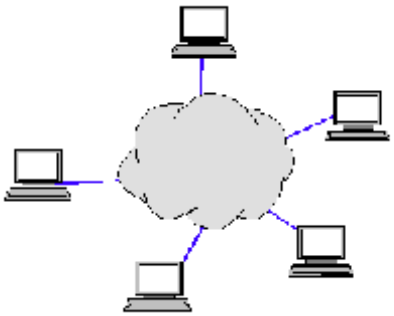


Figure 6 – from netlingo

As opposed to other dictionaries, netlingo comes up with a diachronic reading of the meaning evolution of the word 'cloud' within computing that sees complexity as an originally salient feature later somewhat discarded in favour of a novel dematerialised conceptualisation of the word:

> Originally this was a term for the unpredictable part of a network that data travels through on its way to its final destination. [...] It later morphed into "the cloud" referring to a style of computing in which dynamic, scalable and virtual resources are provided over the Internet.[25]

The compound 'cloud computing' conveys three main salient ideas: complexity, that of a very articulated network across which data travel; not to be identified or unidentifiable, as that of an unnecessarily hard-to-locate place; and intangible or immaterial[26], as a shapeless or easily reshaped entity, i.e., «dynamic, scalable and virtual» (netlingo). In addition, netlingo provides a separate entry for the string 'in the

cloud'. The latter introduces the metaphor CLOUD IS A CONTAINER and confirms the 'too-complex to understand' conceptualisation, but attaches it to the stylised cloud that is usually found in diagrams as *too complex to illustrate* (as in Figure 7) rather than to the wobbly-shaped item in Nature that is selected for "metaphorical utilization":

> Whenever you see an illustration in a magazine or newspaper about how the Internet works, there is usually a cloud drawn in the top portion of the picture to represent the technology and data transfer processes. Since these are too complex to illustrate in a simple diagram, they are shown as happening "in the cloud." (netlingo)

The early idea *too complex to understand* as well as the *too complex to illustrate* come together and hint at avoiding an unrequired processing burden or effort on the part of the hearer. However, as discussed earlier (see p. 40 above), borrowing from Wray (2002) rather than an act of altruism, this should be read as fulfilling a manipulative function, eventually aimed at the speaker's benefit and/or interest. This extends to and impacts on the wording about most cloud computing services, all presented, rather promoted, as the ultimate efficient solution.

3.2. Corpus-based analysis: Tracking intralingual translation from 'cloud cover' (1980s-90s) to 'cloud computing' (2010s-20s)

Investigating the word 'cloud'[27] via a multiword search has shown an interesting diachronic transition: from being almost solely related to the semantic field of meteorology (weather and climate), the lemma 'cloud' has become a stable key source word in compounding that falls into the telecommunications and computer services domains[28]. The shift in frequency for the string <cloud + NOUN> emerges even more clearly when comparing and contrasting three corpora[29]: the British National Corpus (BNC, 1980s-1993), the iWeb (2017) and the News on the Web (NOW, 2010-). The BNC is the oldest of the three and also the smallest in size: 100million words, collecting only British English texts, but a wide range of genres (e.g., spoken, fiction, magazines, newspapers, and academic). The iWeb corpus relies on 14 billion words gathered from 22 million web pages (94,391 websites) in 6 English-speaking countries since 2017, thus offering an insight into historical, geographical and genres variation within the English language. Finally, the largest is The NOW which collects a huge number of entries (18.4 billion words and growing[30]) from web-based newspapers and magazines,

across 20 countries, since 2010 (most recent January 2024). The shift can be easily detected by perusing the first eleven entries in each corpus.

the noun "cloud NOUN" in corpora[31]		
BNC (1980s-1993)	iWeb (since 2017)	NOW (News on the Web - 2010--)
UNIQUE FORMS: 91 TOTAL FREQ: 231 tokens	UNIQUE FORMS: 8,000 TOTAL FREQ: 398,232 tokens	UNIQUE FORMS: 7,032 TOTAL FREQ: 469,959 tokens
1. **cloud cover** F: 27	1. cloud computing F: 42,352	1. cloud computing F: 63,018
2. cloud base F: 17	2. cloud services F: 28,117	2. cloud services F: 37,074
3. **cloud cuckoo** F: 15	3. cloud storage F: 25,875	3. cloud storage F: 18,263
4. cloud tops F: 12	4. cloud service F: 15,799	4. cloud service F: 15,772
5. cloud particles F: 11	5. cloud platform F: 10,348	5. cloud platform F: 14,786
6. cloud formation F: 11	6. cloud infrastructure F: 6,818	6. cloud gaming F: 13,138
7. cloud chamber[32]* F: 10	7. **cloud cover** F: 6,588	7. cloud infrastructure F: 12,936
8. cloud shadows F: 9	8. cloud providers F: 6,334	8. **cloud cover** F: 10,626
9. cloud formations F: 8	9. cloud solutions F: 6,059	9. cloud providers F: 9,357
10. cloud mountain* F: 6	10. cloud security F: 5,709	10. cloud security F: 9,132
11. cloud ears F: 5	11. cloud provider F: 5,134	11. cloud solutions F: 7,559

Table 2: from www.english-corpora.org (*emphasis added*)

Since the three corpora are considerably different in size, the huge discrepancy in unique forms (UFs) for 'cloud NOUN' should, at least partially, be self-explanatory: there are 91 in BNC; 8,000 in iWeb; and 7,032 in NOW. What seems most evident is that in BNC, 'cloud' has no entry belonging to the IT jargon 'the cloud' or 'cloud computing' – despite the first occurrence featured in 1989 according to OED and 'cloud computing' in 1996 according to Word Spy. In BNC, the most frequent 'cloud NOUN' collocations are within the semantic field of meteorology. There are just few exceptions, such as the idiom 'cloud cuckoo'; a specialized term in physics 'cloud chamber'; a Chinese fish, typically referred to as 'cloud mountain' – a short form for White Cloud Mountain Minnow (Tanichthys albonubes), a «freshwater fish and coldwater fish often kept in an aquarium»[33]; an edible Asian mushroom, the 'cloud ear'[34]; and the collocation 'cloud flying' (see table 3) that is a concept not listed in any dictionary, but its meaning can be inferred from the BNC corpus constituent texts as the risky attempt at flying «in a cloud» using a glider. A comparative analysis confirms that meteorology is the strongest domain in BNC, while 'cloud computing' outweighs it in iWeb and NOW. Some recurring and some potentially ambiguous entries within

each specific discourse domain have been manually selected (based on their frequency and meaning potential) in a second table (see Table 3 below).

BNC (1980s-1993)	**iWeb** (since 2017)	**NOW** (News on the Web - 2010--)
13. **cloud forest** F: 3	15. cloud adoption F: 5,634	13. **cloud data** F: 5810
	16. **cloud data** F: 3897	
	18. **cloud forest** F: 3,353 [pl. listed as 36]	17. cloud environments F: 4,685 [sg. listed as 22]
21. cloud flying F: 2	19. cloud environment F: 3,315 [pl. listed as 22]	23. cloud migration F: 3,154
		25. cloud adoption F: 2,385
	38. cloud migration F: 1,305	30. cloud kitchen F: 1,723
	39. cloud atlas F: 1,290	35. cloud atlas F: 1,547
	40. cloud formation F: 1,266	
36. **cloud top** F: 1		
50. **cloud regions** F: 1	61. **cloud tops** F: 924	55. **cloud forest** F: 1,039
79. **cloud data** F: 1	71. cloud space F: 734	58. **cloud tops** F: 1,009
		65. cloud space F: 829
		75. **cloud cuckoo** F: 738
	89. cloud library F: 574	78. cloud ecosystem F: 727
	91. cloud icon F: 515	81. cloud growth F: 698
	95. cloud gaming F: 508	96. **cloud region** F: 627
	NA **cloud region** F: 112	

Table 3: from www.english-corpora.org (*emphasis added*)

There are only six entries – resulting from the 'cloud NOUN' search – common to all three corpora, the first three are in the weather domain, namely 'cloud cover' (meteorology and climate), 'cloud forest' (geography) and 'cloud top(s)'. As for the other three, they are pointing to fixed forms, e.g., 'cloud cuckoo' that is in fact a three-word combined form, 'cloud cuckoo land'. The multiword string does also feature in iWeb (471 entries) and in NOW (738 entries) but among the 200+ listed occurrences. In NOW, there are some occasional variants, e.g., 'cloud cuckoo world', from an article issued in 2014 by ghanaweb.com discussing climate change; or 'cloud cuckoo La La land' featuring in realwestdorset.co.uk in 2010 (well before the release of the film, *La la land* 2016) in a comment discussing local policies in Dorset. Interestingly, the collocation 'cloud atlas' that deals with clouds in the sky features both in iWeb and NOW but not in BNC. By searching the constituent texts, it turns out that the *Memory Cloud Atlas*[35] is a project developed by The Cloud Appreciation Society's (founded in

2005) aimed at collecting pictures about clouds across the globe throughout the years. One more entry deserves mentioning, 'cloud data', listed 79 in the BNC corpus, seemingly standing out as possibly an early cloud computing reference in the sampled string of text offered in the corpus: «The computer models, fed with cloud data and the assumption that the biggest climatic effect is produced when the cloud of sulphuric acid drop lets is most widespread, all come up with figures in this ball park». Despite the multiword sequence «the computer models fed with», the 'cloud data' are denotatively pointing to a collection of data about clouds in the sky emerging from «unobserved eruption» within meteorology rather than any other domain. There are other entries in the two larger corpora, NOW and iWeb, that may attract attention as potentially ambiguous or belonging to samples both within meteorology and computing – as many other compounds often do – such as 'cloud adoption' (NOW and iWeb), 'cloud environment' (NOW and iWeb), 'cloud migration' (NOW and iWeb), 'cloud ecosystem' (NOW and iWeb), 'cloud library' (iWeb), 'cloud growth' (NOW) and 'cloud region' (NOW). However, a closer perusal of the constituent texts of the two corpora portrays a sharp divide between the two fields, as all these entries are about non-natural events occurring in telecommunications, computing, and artificial intelligence (AI).

To complete the analysis, as announced in the stated aim at the beginning of 3.2, one last dictionary entry deserves attention, it is the last among the newly formed compounds of the cloud computing family, namely 'human cloud', as defined by Wordspy.com: «The independent workers that a company, using online sites or apps, can hire temporarily to perform tasks as needed». There are 94 entries in iWeb and 142 entries in NOW. This new-born compound (earliest entry in 2008) is probably the clearest example of the techno-talk that is simultaneously a reification and a way to conceal facts. Here below the sampled texts Word Spy dictionary provides.

2016	Recent developments in cloud computing have seen the addition of the 'human element' to the cloud and consequently the birth of the 'human cloud'. Many organizations are already dealing with the 'human cloud' paradigm. —Dania Radi, "Have You Ever Heard About the 'Human Cloud'?," Academy Cube, April 18, 2016

2015	Employers are starting to see the human cloud as a new way to get work done. White-collar jobs are chopped into hundreds of discrete projects or tasks, then scattered into a virtual "cloud" of willing workers who could be anywhere in the world, so long as they have an internet connection. —Sarah O'Connor, “The human cloud: A new world of work,” Financial Times, October 08, 2015
2014	Companies like PumpWell are expanding the well-understood economies of outsourcing to new sectors, with the help of technologies that are only now maturing. These include the combination of reliable networks and cheap data storage — that thing we call "the cloud" — that enabled so many IT services to be outsourced in the first place. Another is the "human cloud," the idea that professional expertise can be geographically diffused. —Ivor Tossell, “Why the human cloud can do your work better than you can,” The Globe and Mail, November 27, 2014
2008	Thinking about the "human" cloud… e.g. Amazon Turk and other similar things —Matt Hart, “Thinking about the…,” Twitter, October 10, 2008

Table 4: from the Word Spy dictionary

As Trampe argues, reification occurs any time «living beings are treated in accordance to economic-technological ideology like objects that are produced, managed, optimised and utilised» (1991/2001: 238). In the excerpts above (Table 4), other lexical items contribute to such HUMANS AS OBJECTS conceptualisation; particularly crude, for instance, sounds the string «White-collar jobs are chopped into hundreds of discrete projects or tasks, then scattered into a virtual "cloud" of willing workers» (WordSpy 2015). The effect this string produces is brutally disruptive of the conceptual metaphor OBJECTS ARE MADE OF PARTS as opposed to HUMANS ARE WHOLE, typically tracing an ethical divide between the extent to which humans can be reified. Concealment of factual aspects relative to human capital – to use yet another expression of the sort – is because the ‘human cloud’ may be an opportunity both for employers and employees; but it is also among those outsourcing tools that by tapping into workers at different latitude is less tied to job conditions and rights. Both reification and concealment of facts often via euphemisms belong to the «four language-political tendencies» Trampe singles out from his analysis together with «increasing resentment against anything […] traditional» and «slogans and

phraseological elements» (1991/2001: 238) that identify a linguistic manner of (mis)treating Nature, humans included.

The sharp shift in frequency of the word 'cloud' and its collocations and compound combinations across time – from meteorology to telecommunications and the computer sector – shown by the three corpora represents both a loss and a trend: the iWeb and NOW collections of texts seem to portray an increasing lack of interest by a large community for the 'cloud' as a physical phenomenon in the sky (loss), in spite of the most up-to-date threat posed by the pollution-driven climate change. Wherever the attention has shifted, clearly one area of interest or high engagement in the news is within the cloud computing services that come across as offering a comforting message allegedly reiterating the reduction of complexity, workload and somewhat pollution.

Going back to Sapir's key ideas of interests and attention within a language vocabulary, such loss could be understood as a decrease in the community's interest for weather phenomena and an increased attention towards novel IT services. However, since the compound has been popular for almost three decades such emerging attention shift seems an attempt at imposing a narrative that intentionally does not include any fact, warning or awakening towards the impact 'cloud computing' has or may have on our ecosystem; nor is there to be found a hint at its energy demand, dependence, and risks. In iWeb, the other most frequent word in the strings featuring 'cloud computing' is 'benefits' and/or 'beneficial' alongside some other positive lexeme, namely 'cost-effective', 'efficient', 'increasingly'. In addition, the word 'cost' occurs four times and always to describe a positive impact, e.g., «at declining cost» (entry #59), «emissions and VoIP can benefit the company and level off any extraneous costs» (entry #80), «Managed cloud hosting is a cost-effective solution» (#95). Alternatively, similar content is conveyed in slightly different phrasing such as «create cheaper and efficient platforms» (#64) or relative to safety, e.g., «NIST's role in cloud computing is to promote the effective and secure use of the technology» (#38).

Whether intentional or not (maybe not), the trend of the new sense has distracted us away from meteorology phenomena via an almost reassuring storyline in which any aspect of organic or inorganic matter has been dismissed as irrelevant and/or not applicable. So 'the cloud' ultimate meaning seems to rely on the figurative appeal of a

romanticised container (see 'in the clouds') through which activities are miraculously carried out easily, quickly, cheaply, sustainably. However, this is far from what we learn from the most recent literature on the topic (MALMODIN et al. 2018; MONSERRATE 2022) and, as a matter of fact, 'The cloud' is now being discussed as "green cloud computing" and 'data centres' as "green data centres"[36] since such technologies come at high costs in terms of human and natural resources as well as the great environmental challenges they continue to pose. Are we thinking/talking with Nature or not? Ortega y Gasset, the Spanish philosopher and scholar, would label this way of talking as «a joke» (1937/2000: 58), stressing out how «[t]oday, when we speak, we don't say what the language in which we speak says, but instead, by conventionally using, as if joking, what our words say for themselves […]» (Ibidem) and to make his point clearer he would explain the paradox by discussing the reasons behind us still talking about the "sun rising" in spite of the Ptolemaic revolution:

> [T]here was a time in which Indo-European man thought, in fact, that the sun was a male, that natural phenomena were spontaneous actions of wilful entities, and that the beneficent star was born and reborn every morning in a region of space. Because he believed it, he searched for symbols to say it, and he created language. To speak was […] to speak seriously. The words, the morphology, the syntax, enjoyed full meaning. The expressions were saying what seemed to be the truth about the world, were announcing new knowledge, learning. They were the exact opposite of jokes» (Ib.)

In fact, words had «sacred value» (Ib.) back then and «speaking was knowing» (ORTEGA Y GASSET 1937/2000: 59). Current new coinage seems no different as scientific knowledge is often being dismissed or downplayed, made beneficial for the speaker and ultimately «[o]ur languages are anachronistic instruments. When we speak, we are humble hostages to the past» (ORTEGA Y GASSET 1937/2000: 60). The past in this case is a Capitalocene framing that informs the way we talk/think with Nature or rather against it.

4. Conclusion

Undoing newly formed collocations, compounds, or blended words and tracing their frequency has been an attempt at accessing *stories/narratives*, often opaque, that belong to one specific framing and mindset, i.e., the anthropocentric one. By appropriating pre-existing words, while simultaneously keeping up with the unfolding

socio-economic shift, these formulaic sequences have not introduced much novelty, rather they somewhat have proposed a continuum with previous times and semantics. That is, they still frame *industrial progress* relying on reification, concealment of factual aspects and euphemism. New coinage is thus prescriptive rather than descriptive in scope, mainly focused on the manipulative function of multiword strings that are easily coined and catchy but are indeed obscure and enhance an unsustainable approach, whereby humans are still encouraged to legitimately appropriate and exploit natural resources within a limitless resource understanding of our planet. Despite its exploratory nature, the current investigation has been an attempt at engaging with Halliday's discussion of grammar as a «theory of experience» and language as a «metastable system» (1990/2001: 195) changing in interaction. As the scholar argued, «What we can do is draw attention to it; to show how the grammar promotes the ideology of the growth, or growthism» (HALLIDAY 1990/2001: 196) and work on specific issues for instance

> «replacing war discourse (the language of the Pentagon) by peace discourse, the discourse of borrowing (the language of commercialism and credit capital) by that of saving, the discourse of building (the language of megacontracts) by that of keeping under repair. We might put certain key words in the dock, words like production and growth» (HALLIDAY 1990/2001: 197).

As for further fruitful exploration, it could be twofold: first, as a natural progression of this work, other digital age compounds could be identified, analysed and discussed possibly also searching for other transition, transmission and translation shifts as the one discussed here about the source word 'cloud' – from meteorology to computing – relying on English corpora and digging deeper into their constituent texts. As for the second one, a multicultural and multilingual perspective of analysis could usefully be adopted. Since the English language has been a lingua franca both globally (MCARTHUR 2002) and across Continental Europe[37] (SEIDLHOFER 2010) and it has strengths in «the domains of the media, the internet, advertising, popular youth culture and entertainment (PREISLER 1999: 242ff.; TRUCHOT 2002: 18f.; PHILLIPSON 2003: 72f.; BERNS *et al.* 2007; PENNYCOOK 2007)» (SEIDLHOFER 2010 p. 357), further work is needed to fully understand the implications of the discussed transferring phenomenon of the world 'cloud' to see if and how it applies to other lingua-cultures. By way of illustration, in French, 'cloud computing' features as an English loan, but

there are at least two more French compounds to refer to the same concept, namely 'informatique dématérialisée' (see endnote 26) and a French calque 'informatique en nuage'. Calque is also the option selected by Portuguese, both standard and Brasilian, in its three words compound 'computação em nuvem'. Fairly popular in other languages, a variety of calques often features alongside the English loan, e.g., Lithuanian 'debesų kompiuterija', Polish 'chmura obliczeniowa' (also 'przetwarzanie w chmurze'), Romanian 'Calcul în cloud'. Interestingly enough, Norwegian, besides the English loan, opts out of the calque and privileges transparency by a different interlingual translation technique, that is, explicitation moving towards slightly different, somewhat more descriptive compounds, i.e., 'Databehandling i nettskyen' (in English 'Data management/processing in the cloud') or 'Nettskybasert databehandling' (in English 'cloud-based data management/processing'). In Finnish, there are two options, namely the calque 'pilvilaskenta' ('pilvi' is cloud and 'laskenta' calculator), and 'pilvipalvelut' or 'pilvipalvelu' (in English 'cloud services'). A cross cultural overview of the linguistic evolution of the source word 'cloud' or other digital age compounds could also lead to a critical investigation of the frequency and relationship between loans and calques; this in turn could allow to expand on the topic of English as a lingua franca in Continental Europe and the framing it typically carries along.

Bibliography

Books

BENCZES R., *Creative Compounding in English: The Semantics of Metaphorical and Metonymical Noun-noun Combinations*, John Benjamins Publishing, Amsterdam-Philadelphia 2006.

HUGHES J. D., *An environmental history of the world: humankind's changing role in the community of life*, Routledge, London and New York 2009.

LÉVI-STRAUSS C., *La pensée sauvage*, Plon, Paris 1962.

MCARTHUR T., *The Oxford Guide to World English*, OUP, Oxford 2002.

MOORE J. W., *Capitalism in the Web of Life: Ecology and the Accumulation of Capital*, London, 2015.

PETERS A. M., *The units of language acquisition*, Cambridge University Press, Cambridge 1983.

STIBBE A., *Animals Erased: Discourse, Ecology, and Reconnection with the Natural World*, Wesleyan University Press, Middletown, CT 2012.

STUBBS M., *Words and phrases: Corpus studies of lexical semantics*, John Wiley & Sons, Oxford 2001.

WRAY A., *Formulaic language and the lexicon*, Cambridge University Press, Cambridge (UK), 2002.

Edited volumes and articles in collective works

ALGEO J. (ed.), *Fifty Years Among the New Words: A dictionary of neologisms, 1941–1991,* 1991.

JAKOBSON R., «On linguistic aspects of translation», in Venuti, L. (ed.) *The Translation Studies Reader*, Routledge, London and New York (1959/2000), pp. 113-118.

JUNG M., «Ecological criticism of language», in FILL, A., MUHLHAUSLER P. (eds.), *The Ecolinguistics Reader: Language, ecology and environment,* Continuum, London and New York, 1996/2001, pp. 270-285.

HALLIDAY M.A.K., «New Ways of Meaning: The Challenge to Applied Linguistics», in FILL, A., MUHLHAUSLER P. (eds.), *The Ecolinguistics Reader: Language, ecology and environment.* Continuum, London and New York 1990/2001, pp. 175-202.

LIBBEN G., «Why study compound processing? An overview of the issues», in LIBBEN, G., JAREMA G., *The representation and processing of compound words*, OUP, Oxford 2006, pp. 1-22.

LIBBEN G., GAGNÉ C. L., DRESSLER W. U., «The representation and processing of compounds words», in DRESSLER W. U., PIRRELLI V., PLAG I., *Word Knowledge and Word Usage*, De Gruyter, Berlin and Boston 2020, pp. 336-352.

MOON R., «What can a corpus tell us about lexis», in *The Routledge handbook of corpus linguistics*, Routledge, London and New York 2010, pp. 197-211.

ORTEGA Y GASSET J., «The misery and the splendor of the translation», in Venuti, L. (ed.) *The Translation Studies Reader*, Routledge, London and New York (1937/2000), pp. 49-63.

SANTINI L., «Reframing: parole composte e social media», in CONOSCENTI M. et al. (eds.), *Quaderni del CIRM 3*, Tab Edizioni, Roma 2023, pp. 63-86.

SAPIR E., «Language and Environment», in FILL A., MUHLHAUSLER P. (eds.), *The Ecolinguistics Reader: Language, ecology and environment*, Continuum, London and New York 1912/2001, pp. 13-22.

SEIDLHOFER B., «Lingua franca English», in KIRKPATRICK A., *The Routledge handbook of world Englishes*, Routledge, London and New York 2010, p. 355-371.

TRAMPE W., «Language and ecological crisis», in FILL A., MUHLHAUSLER P. (eds.), *The Ecolinguistics Reader: Language, ecology and environment*, Continuum, London and New York 1991/2001, pp. 232-240.

WAKELIN D. H., RICKETTS J. A., «The nature of Ironmaking», in *The making, shaping and treating of steel*, The Carnagie Steel Company, Pittsburg, 1999, pp. 1-36.

Journal articles

BENCZES R., «Metaphor- and metonymy-based compounds in English: a cognitive linguistic approach», *Acta Linguistica Hungarica*, 52(2-3), 2005, pp. 173-198.

CHRISTIANSEN M. H., ARNON I., «More than words: The role of multiword sequences in language learning and use», *Topics in cognitive science* 9(3), 2017, pp. 542-551.

COOK G., «'A pig is a person'or 'You can love a fox and hunt it': Innovation and tradition in the discursive representation of animals», *Discourse & Society* 26.5, 2015, pp. 587-607.

ENTMAN R. M., «Framing: Toward clarification of a fractured paradigm», *Journal of communication*, 43(4), 1993, pp. 51-58.

GRZEGA J., «Some aspects of modern diachronic onomasiology», *Linguistics* 40(5), 2002, pp. 1021-1045.

KIEŁTYKA R., «Patterns of metaphor-metonymy interaction in animal-specific complex lexical units», *Linguistica Silesiana* 40, 2019, pp. 225-256.

LEHRER A., «Understanding trendy neologisms», *Rivista di Linguistica*, vol. 15, 2003, pp. 369–382.

MALMODIN et al., «The Energy and Carbon Footprint of the Global ICT and E&M Sectors 2010–2015», *Sustainability*, 10, 3027, 2018, pp. 1-31.

MOBERG et al., «Printed and tablet e-paper newspaper from an environmental perspective — A screening life cycle assessment», *Environmental Impact Assessment Review* 30, 2010, pp. 177–19.

MONSERRATE S. G., «The Cloud Is Material: On the Environmental Impacts of Computation and Data Storage», *MIT Case Studies in Social and Ethical Responsibilities of Computing*, Winter 2022, https://doi.org/10.21428/2c646de5.031d4553 – available online https://mit-serc.pubpub.org/pub/the-cloud-is-material/release/1 (last accessed January 2024).

OTTER C. et al. «Roundtable: the Anthropocene in British history», *Journal of British Studies* 57.3, 2018, pp. 568-596.

ROIG-MARÍN A., «'Blended' Cyber-Neologisms», *English Today* 128, 32(4), 2016, pp. 1-5.

STIBBE A., «An ecolinguistic approach to critical discourse studies», *Critical Discourse Studies*, 11(1), 2014, pp. 117-128.

THEAKSTON A., LIEVEN E., «Multiunit sequences in first language acquisition», *Topics in Cognitive Science* 9(3), 2017, pp. 588-603.

WRAY A., «Formulaic sequences as a regulatory mechanism for cognitive perturbations during the achievement of social goals», *Topics in cognitive science* 9(3), 2017, pp. 569-587.

Online resources

Collins English Dictionary, https://www.collinsdictionary.com/ (last accessed January 2024).

GeSI. Smarter 2020: The Role of ICT in Driving a Sustainable Future. A Report by Boston Consulting Group on Behalf of GeSI. 2012. Available online: https://gesi.org/report/detail/gesi-smarter2020-the-role-of-ictin-driving-a-sustainable-future (last accessed January 2024).

English corpora [BNC, iWeb, NOW], https://www.english-corpora.org/ (last accessed January 2024).

Oxford English Dictionary (OED), https://www.oed.com/ (last accessed January 2024).

Merriam-Webster Dictionary, https://www.merriam-webster.com/ (last accessed January 2024).

Netlingo – The internet dictionary, https://www.netlingo.com/dictionary/newest.php (last accessed January 2024).

Wikipedia – English version, https://en.wikipedia.org/ (last accessed January 2024).

WordSpy online dictionary, https://wordspy.com/ (last accessed January 2024).

[1] A capital letter is used whenever the word 'nature' is meant in the following sense: "The phenomena of the physical world collectively; esp. plants, animals, and other features and products of the earth itself, as opposed to humans and human creations." (OED) However, contrary to such definition humans are included in Nature insofar as they can be considered living creatures, i.e., animals.

[2] The concept is here adopted following Entman's definition: "Framing essentially involves *selection* and *salience*. To frame is to *select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation* for the item described. Typically frames diagnose, evaluate, and prescribe […] frames have at least four locations in the communication process: the communicator, the text, the receiver, and the culture. (emphasis as in the original - 1993: 52)

[3] The definition adopted throughout this work is drawn from Benczes: «a compound is a word that is made up of two or more elements, the first of which is either a word or a phrase, the second of which is a word» (2006, p. 8). The scholar provides a critical definition of compounds towards the one offered by Ingo Plag (2003) within which recursivity is not acknowledged and reads as follows: «(1) a compound is made up of two (and not more) elements; and (2) the constituting elements of a compound are words» (Benczes 2006, p. 7).

[4] For a comprehensive discussion about onomasiology and semasiology see Grzega (2002). As for reasons behind semasiological change, Grzega quotes Blank (1997a: 345ff.; 1999: 70ff.) who "within the frame of

semasiological changes, offers a catalog of motives, […] namely sociocultural change, close conceptual or factual relation, complexity and irregularity in the lexicon, emotionally marked concepts." (2002: 1029)

[5] https://wordspy.com/words/nerd-bird/ (last accessed December 2023)

[6] See 'enviropig' in the iWeb corpus: 42 entries over 19 texts; or in the NOW corpus: 50 entries in 19 texts.

[7] https://wordspy.com/words/enviropig/ (last accessed December 2023)

[8] On the one hand, according to the OED, the earliest use of the adjective 'dead tree' - meaning 'printed on paper' - is to be found in Raymond E., *The new hacker's dictionary*, 1991. On the other hand, in WordSpy, the earliest use is identified in a sample commenting on an electronic paper taken from the *Wall Street Journal* on March 23 1995.

[9] Also hyphenated as "dead-tree edition", from https://wordspy.com/words/dead-tree-edition/ (last accessed December 2023).

[10] The eco-friendliness of paper-based media against digital outlet is a highly debatable and controversial question that by far exceed the scope of the present work. A literary review and discussion of the topic is offered in Moberg et al. 2010. For information about the energy and carbon footprint of digital media, ICT and the entertainment industry see Malmodin et al. 2018.

[11] The compound has both a propositional and a figurative sense. Originally, "astroturf" refers to "The action or process of covering an area with Astroturf" (first occurrence 1966, OED), as a trademark, it points to an artificial fiber used instead of grass on some sports fields. However, figuratively it only started to be adopted in the late 1990s in particular in two discourse domains: politics and advertisement as "The action, process, or practice of falsely suggesting public or grass-roots support for a policy, product, movement, etc., through the use of an organized campaign which simulates such support". It's interesting to note that within the OED Frequency table, between 2017 and 2023, the compound usage peaked between April and December 2022 while its frequency dwindled rapidly in the early three months of 2023.

[12] In this compound 'natural' means 'unmade/unpaid' as compared to artificial human-made, e.g., 'natural' or 'organic search results' are non-paid results from a browser or other app search tool that typically include both paid search results (ads) and others found by frequency of use and/or an algorhythms and based on the content of web sites (natural search results).

[13] From https://wordspy.com/words/human-cloud/ (last accessed December 2023). As suggested by Roig-Marín (2016), since traditional dictionaries cannot keep up with neologism (compounds, blends, collocates), other sources should be adopted to investigate new coinages, such as online databases of neologisms, namely Word Spy (<www.wordspy.com>) and Netlingo .

[14] A detailed analysis and forecast of the ICT and digital sectors impact are offered by the Smarter 2020 report by GeSI 2012.

[15] A noun referring to "Ineffective green technology, particular equipment added on to an existing building that does little to reduce the building's use of natural resources" as from: https://wordspy.com/words/eco-bling/ (last accessed December 2023).

[16] https://www.collinsdictionary.com/dictionary/english/eco-bling

[17] Thompson, Laura. "The Relations of Men, Animals, and Plants in an Island Community (Fiji)." American Anthropologist, vol. 51, no. 2, 1949, pp. 253–67. JSTOR, http://www.jstor.org/stable/664108. Accessed 20 January 2024.

[18] Moore, Jason W. "'The Modern World-System' as Environmental History? Ecology and the Rise of Capitalism." Theory and Society, vol. 32, no. 3, 2003, pp. 307–77. JSTOR, https://www.jstor.org/stable/3108538. Accessed 20 Jan. 2024.

[19] https://www.oed.com/dictionary/cloud_n?tab=meaning_and_use&tl=true#9173397

[20] Reporting a long-standing use in networking and telecom of this metaphor, Wikipedia credits «David Hoffman, a General Magic communications employee» with its early usage in 1994.

[21] In "Mobile agents" by J. White (1996), http://www.klynch.com/documents/agents/ (last accessed January 2024).

[22] https://wordspy.com/words/cloud-computing/ (last accessed December 2023).

[23] https://wordspy.com/words/fog-computing/ (last accessed January 2024).

[24] The metonymy-based compound 'capitalist computing' is defined starting from the contiguity between a person and the capital they own as "A term for new media moguls who seek to make money by creating and managing cloud computing for individual and business customers" (https://www.netlingo.com/dictionary/c.php)
[25] https://www.netlingo.com/dictionary/c.php (last accessed December 2023).
[26] It is interesting to note that in French, beyond the loan 'cloud computing', another multiword string features to refer to it, namely 'informatique dématérialisée' which is an interlingual translation via an explicitation strategy that exposes one of the salient features the metaphoric use of the source word 'cloud' aims at.
[27] In the BNC, the word 'cloud', as an individual lexical item, has 2,098 entries in 793 texts; in iWeb and in NOW, there are more than 500,000 entries (859,745 in iWeb; 935,749 in NOW).
[28] The metaphoric extension of the word 'cloud' and its migration into a new semantic area of reference was brought to attention by *The gathering cloud*, a «hybrid print and web-based work» by J.R. Carpenter – writer, artist and researcher – who aimed to address «the environmental impact of so-called 'cloud' storage by calling attention to the materiality of the clouds in the sky and on server farms» (Berens et al. 2022).
[29] All thee available from the English corpora by Mark Davis, https://www.english-corpora.org/ (last accessed January 2024).
[30] As stated on the corpus description, it "grows by about 120-140 million words of data each month", from https://www.english-corpora.org/iweb (last accessed January 2024).
[31] All data from the three corpora were last accessed in January 2024.
[32] Specialized countable noun, within Physics, referring to "a device containing a gas in which units of matter smaller than atoms are shown to be present by the small drops of liquid that they produce" (Cambridge dictionary).
[33] https://en.wikipedia.org/wiki/White_Cloud_Mountain_minnow (last accessed December 2023).
[34] In the Cambridge dictionary: noun [C] (also *cloudear*), "a thin, black mushroom that can be eaten, and is used especially in Chinese cookery".
[35] https://www.memorycloudatlas.org/explore.php (last accessed January 2024).
[36] See for example: Jaeger, P. T., Lin, J., Grimes, J. M., & Simmons, S. N. (2009). "Where is the cloud? Geography, economics, environment, and jurisdiction in cloud computing". *First Monday*, 14(5); or Radu L-D. Green Cloud Computing: A Literature Survey. Symmetry. 2017; 9(12): 295.
[37] Seidlhofer discusses the topic of English as "the de facto 'extraterritorial' lingua franca throughout Europe" at length also offering a critical insight into such domineering aspect within the European context and institutions. "This has, however, brought about resistance and controversy, due to the continued symbolic significance of national languages that European policymakers still seem to insist on. In contrast with English as an (intra)national language like the other (national) languages of Europe (where of course regional lingua francas also exist), the role of English as a lingua franca (henceforth ELF) is not a national one; it fulfils different roles from national languages. And since 'language is as it is because of what it has to do' (Halliday 2003: 309), ELF is also developing its own, supranational forms." (355-56)