U-Lingua

The Undergraduate Linguistics Association of Britain's Quarterly Magazine

THE **HUMAN** ISSUE

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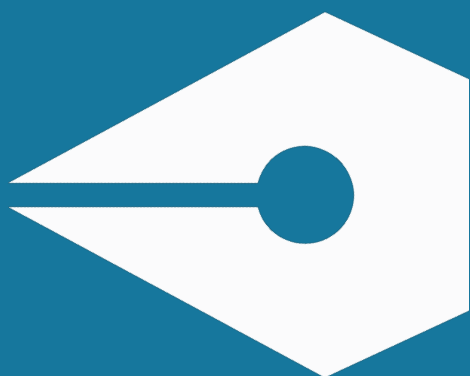The Importance of Awareness

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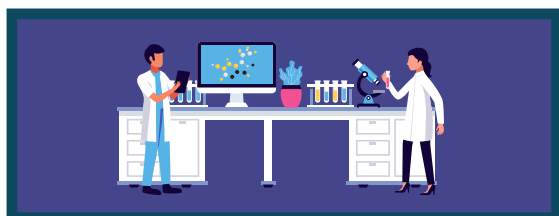
Editor's Letter

To kick off a new academic year, the theme for this issue is Human: we have decided to look at the human language in general, and what the human condition of using language is. Whether or not you consider animal communication "language", most of us would not deny that human language has a certain distinction compared to those of the animal world around us. So, what makes our language different? How does language tie into the biological, cultural and social aspects of being human? Our Section Editors and Columnists have compiled and written an enthralling conglomeration of discussions on the (debated) uniqueness of language, as well as its manifestation in our society, culture, and the linguistic industry. Another exciting development for the magazine has been the inception of our instagram account @ulinguamagazine, where we'll be keeping you posted on the themes and content of upcoming issues!

Some highlights of this issue include Xinmei's corpus analysis of anti-vaccination discourse; an interview with Ines Montani on the computational side of linguistics; and a look at how Europe has progressed in terms of gender-inclusive pronouns.

Both the *Curiouser and Curiouser* and *Hands-On Approach* columns touch on the current phenomena of online learning and what that means for us linguists, whether you've just begun your journey or are writing your dissertation.

I am deeply grateful for the writers, interviewees, Section Editors, Columnists and our Editorial Designer, who have all put in so much time and effort over their summer break to make this issue possible. Our thanks go to you also, our readers, for taking the time to read our work — I hope you find this issue as fascinating as I did!

S. C. Jat
Editor-in-Chief, *U-Lingua*
University of Cambridge

Over the last four months, we at ULAB have been very busy! We recently reopened submissions to JoULAB, our undergraduate linguistics journal, and we have made the move to rolling submissions. If you've done any research during your undergraduate degree that you're particularly proud of and would like to see published, please consider submitting! After many hours spent writing suitable questions in a variety of linguistics subfields, and compiling accompanying reading lists, we also launched our very first undergraduate essay competition! The deadline for this is 13th December, and more details can be found on pp.52-53, and on our website. In August we also had a very fun evening trying to get out of an online linguistics-themed escape room together — big thanks to Eloise Parr, our Events and Opportunities Coordinator, for organising this!

As university semesters begin in the UK, we look forward to welcoming new students into our community and hope to see lots of new faces at our online events. We are also working on establishing a buddy scheme, so please feel free to reach out to us if you have any thoughts on this! We wish you a legendairy start to the academic year and hope to see you at some of our upcoming events.

Cliodhna Hughes
National Chair, *Undergraduate Linguistics Association of Britain*
University of Edinburgh

I know we are still many months out but I hope you all are starting to get excited about ULAB2022 and all the amazing people and linguistics that will be involved! Our team is working hard on laying the foundations for the conference right now, organising funding and other essentials. We know there may be some concerns about how we will progress given the changing public health situation, but I remain optimistic we will be able to see your faces in our lovely city. Nonetheless, we will be making preparations for online participation should they be necessary. I hope that we will be able to meet in person, and please do your part to make that possible for all of us. Please get vaccinated if you're eligible, test yourself regularly if you can, and continue to follow public health guidance. Let's do what we can to nerd out about linguistics together in Edinburgh this spring!

Riley Crouch
Local Chair, *Undergraduate Linguistics Association of Britain*
University of Edinburgh

Meet Our Institutional Representatives

Roma Dhasmana, University of Aberdeen

Ro is a second-year Linguistics and Spanish undergraduate at the University of Aberdeen. Her main interests lie in second language acquisition and syntax. When not studying, she can be found singing in choirs, listening to horror podcasts, and thinking about cats.

Charlie Cross, Bangor University

Charlie is a second-year student studying Linguistics and the English Language at Bangor University. He enjoys language change and etymology. He is also a fan of pragmatics and implicature, particularly in relation to autism. In his spare time he is usually coming up with things to write about but never writing about them, fencing, and playing Dungeons and Dragons.

Eloise Parr, University of Birmingham

Eloise Parr (she/her) is a first year PhD Linguistics student at the University of Birmingham. She graduated from Coventry University with a BA (Hons) in English and then a MA in Applied Linguistics from the University of Birmingham. Her research is using corpus-assisted metaphor analysis to explore pregnancy metaphors. When not doing linguistics, Eloise can be found reading, tending to her plant babies, or unironically enjoying a Zoom quiz!

James Morley, University of Cambridge

James is a first-year undergraduate in Linguistics at the University of Cambridge. He's enjoyed exploring all aspects of linguistics so far, but some of the topics he's found most exciting to explore are generative syntax and the Minimalist Program, morphological theory and its interface with syntax, and ellipsis phenomena. Outside of linguistics, he is a big fan of watching fast cars go round in circles, and enjoys taking part in quizzes.

MICHAEL GOESSLER, UNIVERSITY OF EDINBURGH

Michael is a third-year Linguistics student at the University of Edinburgh and currently president of Edinburgh's Linguistics Society. Originally from Styria, Austria, he entered the world of linguistics as a conlanger, knowing from age 15 he wanted to make language science his degree. Besides the joys of morphosyntax and pretending to believe in Universal Grammar, he spends most of his time playing the trumpet and having writer's blocks or trying to find more stuff to do while quietly (and not so quietly) complaining about how busy he is.

MAGGIE MI, LANCASTER UNIVERSITY

Maggie is a third-year Linguistics student studying at Lancaster University. Her passion for linguistics was kindled by her first linguistics book (*Atoms of Language* - Mark Baker) and linguistics puzzles. Currently, she is particularly fascinated by NLP, computational research in semantics, syntax, morphology and corpus research. When she is not thinking about syntax trees and programming, she is a full-time tea enthusiast, campanologist and tree-watcher.

CECILIA TANG, UNIVERSITY OF MANCHESTER

Cecilia is a second-year undergraduate student at the University of Manchester. They've enjoyed exploring a lot of areas of linguistics, but they are most interested in first and second language acquisition, as well as cross-linguistic variation. Outside of linguistics, they enjoy reading, listening to music and appreciating gay memes.
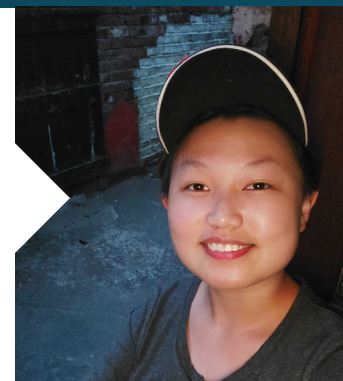
JAIDAN MCLEAN, UNIVERSITY OF OREGON

Jaidan is a third-year undergraduate Linguistics student at the University of Oregon. They are particularly interested in sociolinguistics and language variation, with a little semantics thrown in there to spice it up. Jaidan is also currently an undergraduate member of the UO Linguistics Department's Diversity, Equity, and Inclusion Committee in hopes to create more discussion and change for equal education around linguistic diversity. Outside of linguistics, they enjoy learning new languages (as they have been studying Mandarin for 4 years now), painting, and listening to the entire discography of any new band they find.

GRACE COTTON, UNIVERSITY OF ULSTER

Grace is a Language and Linguistics student heading into her final year at Ulster University. She has a particular love for studying Children's Language and Phonetics. Along with this, Grace enjoys studying dialects and other topics within Sociolinguistics. Outside of University, she plays hockey, loves reading and being involved in as much as she can.
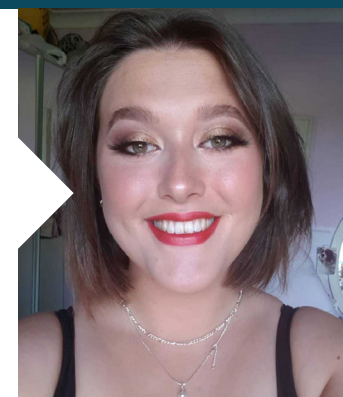
HOT OFF

THE PRESS

Translating COVID:
An Interview with Joey Windsor

In this interview, Elif Yildiz (third year linguistics student at the University of Edinburgh) speaks to Joey Windsor (Medical linguist at the University of Calgary in the Cumming School of Medicine) about Medical Linguistics and Knowledge Translation.

EY: Hi, Joey, thank you so much for agreeing to do this interview. We first met you through the linguists in industry panel at ULAB-2021. But for those who couldn't attend, could you tell us a bit about yourself and what you do?

JW: Thank you for speaking with me. I wear a few hats in linguistics: other than being an occasional instructor for various linguistics or Blackfoot language courses, I'm also a conlanger (someone who constructs languages for fictional works) and President of the Language Creation Society — an international not-for-profit organization dedicated to promoting the art, craft, and science of constructed languages; but my full time job is in the Cumming School of Medicine at the University of Calgary where I'm a Knowledge Translator. The largest portion of my job is to take the information generated in our lab around chronic immune-mediated inflammatory diseases (such as inflammatory bowel disease or celiac disease) and make it accessible to a wide variety of stakeholders — from clinicians to government and funding bodies, to afflicted persons and their caregivers.

Joey Windsor, Medical linguist

EY: Before we get into the details, could you define for us what exactly is medical linguistics and knowledge translation? Do these two fields necessarily co-occur or are there other subfields in medical linguistics?

JW: Medical linguistics is perhaps not a well-defined branch of linguistics or medicine, so I'm sure definitions may vary or some medical linguists might work outside of the scope of what I describe. However, medical linguistics is the area of research that looks at communication between groups of healthcare users — whether this is between specialists in different areas of medicine or between a medical professional and someone needing treatment. The focus of medical linguistics can look at standardizing language for optimal understanding, strategies to increase comprehension for non-specialists, or even updating or suggesting new terms for dated ideas or conceptions. For example, one of the diseases I primarily work with is commonly known as Crohn's disease after the first author of a 1932 paper that provided evidence that this form of ileitis was separate from a condition we now refer to as ulcerative colitis[1]. A medical linguist may ask if a disease should in fact be named after a particular author on a study (in this case, Burril B. Crohn), or if the name should be updated to *crohns disease* (without the genitive), or *crohn disease* (without the *-s* entirely), or remove the naming feature to call the disease *regional enteritis* (for example). While this may not seem like an important question, this is part of humanizing people with the disease. The vernacular of previous decades might refer to *Crohn's Disease Patients*; in modern times there is a shift to

humanize these individuals by referring to them as *people/persons/individuals with Crohn's disease*. This small adjustment to our language can help an afflicted person feel less like a specimen or a number and more like an individual in the eyes of the physician, which can positively enhance their healthcare experience.

Knowledge translation (KT), on the other hand, could be considered a component of medical linguistics where the emphasis is on improved communication. The point of KT is to make sure that generated knowledge becomes incorporated into future practice, which we do by including end-stage users as part of the research (sometimes called integrated KT or iKT). In my field, this means that we involve members of the inflammatory bowel disease community in our research, whether they are afflicted themselves, or they are advocates for those who are afflicted, or they are physicians that treat these conditions. Thus, since the people who will ultimately use the generated knowledge are part of the research, when it comes time to put the research into practice, they will already be familiar with the information. The second aspect of KT focuses on communication strategies; for me, this is where I use structural linguistics to help. Reading science tells us that a reader has a finite amount of energy to split between two tasks: parsing the structure (sentence) and interpreting the meaning. Using structural linguistics (in this case, morphosyntax), we can reduce the structure: eliminate ambiguity and minimize the effort needed for parsing, thus giving the reader more energy for interpreting the meaning. In many ways, my approach to KT is as a scientific writer, but using structural linguistics to facilitate communication to non-specialists.

EY: You might be the only linguist I know of who works at a faculty of medicine. When starting this job, were you entering a whole new world with all its difficulties or did your linguistics degree prepare you well for this?

JW: Yes and no. My graduate training provided me with a lot of transferable skills. However, neither these skills nor my specific training in linguistics prepared me to go into medicine. There was a lot of on-the-job learning and getting up to speed with the medical vernacular and ways of doing certain things. I also wasn't hired because of my training in syntax; this was something I brought to the job that I think makes me more effective at what I do. If I was to give anyone studying linguistics one piece of advice: even though your training is with certain aspects of language-related data, you are becoming a data scientist, and most of what you are learning can be applied to a multitude of different types of data.

EY: Each branch of linguistics has its own modus operandi, for example language documentation requires a protocol of elicitation or controlled elicitation, precise transcription of data, and descriptive analysis… Could you give us an example of how your day goes about when you work on a project of medical linguistics?

JW: I edit documents in a way to make them accessible without watering down the science that makes them valuable. Usually, I receive a manuscript from a team of researchers that is almost complete. I find out what the goal of the manuscript is; the ultimate audience for the piece guides me in how I edit the manuscript. If the article is destined for a specialist journal, I don't have to work so hard to translate jargon, but I still go through line by line looking for inconsistencies, ambiguities, and any impediment to understanding. By impediments to understanding, I frequently mean unnecessary structural (morphosyntactic) complexity. Many scientific writers are guilty of using big words and complex phrasing. Take for example, the sentence *vaccinations protect people*. That sentence is simple, and we all understand it, but let's look closer at *vaccinations*: morphologically, this is *vaccine-ate-tion-s*: *-ate* turns the noun vaccine into a verb vaccinate, *-tion* turns vaccinate into a noun, and then we add the plural *-s*. Of course *vaccine* and *vaccination* can have different meanings and one might be more appropriate in a particular sentence than the other; but, we can reduce all that morphological complexity that turns a noun into a verb, just to turn it back into a noun: *vaccines protect people*. We have dramatically reduced the structural complexity that a reader needs to parse. When you do this on the scale of a full journal article (as well as taking advantage of syntactic priming by repeating similar structures in series, and other tricks of the trade), all of those small fixes add up to a much easier to understand article in the end. If the article that I'm working on is either going to be entirely geared to a non-specialist audience, or if we anticipate non-specialist readers in addition to specialists, then I do the same work, but also take more time to explain some of the jargon — I don't eliminate jargon, necessarily, but I make sure any jargon is well-defined and made easier to understand in context.

EY: I read on your website that you are currently working on a paper looking to compare medical practices between the western world and newly industrialized countries. Do you often research how cultural differences or similarities shape medical practices?

JW: Specifically related to the research I'm engaged in, inflammatory bowel disease (and most other chronic immune-mediated inflammatory diseases) were once considered diseases of the Western world, almost exclusively diagnosed in those of European descent living in industrialized parts of the world. More and more frequently, we are seeing the rate of these diseases increase in newly industrialized and developing regions of the world. These changes in the epidemiology of the diseases have led researchers to think there is something tied with Westernization that might be triggers for these diseases: diet, pollution linked to industrialization, over-prescription of antibiotics, reduction in breastfeeding rates of new-borns, hygiene practices, etc. One of the major goals of our research program is to compare major markers of disease epidemiologies across global regions in different stages of development: through watching similar patterns unfold today in areas like Japan, China, and South Korea as what Canada, the US, and the UK went through a century ago, we may be able to predict what is in store for developing nations like South Africa, Brazil, and Malaysia. If we can predict what the future burden of disease will be (defined as both the extent of the population that will require care as well as the cost of care to both the government and the individual), we can arm local policy makers with the knowledge they need to prepare for future challenges. Similarly, if we identify plateaus in the growth rate of disease incidence/prevalence in the Westernized world, we can also estimate what our own future burden of disease will be.

EY: With the pandemic, there has been both an increase of communication between the medical world and the general public and a multiplication of misinformation, miscommunication and distrust. Can your job help bridge this gap? Do you translate knowledge for health professionals only, or do we (the public) also benefit from it? Why exactly do we need medical linguists?

JW: This is an excellent question; one of the most difficult things we are dealing with in global health is the spread of misinformation and distrust of science. The iKT approach asks the people who need the information to be part of our research so they have a more intimate knowledge of how the results are being produced and how to use the generated knowledge, but also allows us to frame the generated knowledge in a way that is accessible to non-specialist audiences. One of the major aspects of my specific job over the course of the pandemic was to support a team of over 30 researchers (physicians, epidemiologists, etc.) across Canada in providing frequent updates to the inflammatory bowel disease community on COVID-19 through a weekly (later monthly) webinar series. In this capacity, I was able to use yet another aspect of iKT: multimedia knowledge dissemination. In other words, while I would work with the physicians doing presen-

tations to the community on the webinar to help make their wording accessible, I was also able to create graphics to support the verbal component, written materials for a website, and short YouTube clips that could be viewed afterwards. While educationalists have debunked the notion of auditory vs. visual vs. manual (etc.) learners, we know that people prefer to receive information in particular ways; thus, by providing the information in audio/visual, graphic, and written formats, we endeavoured to make it more accessible to anyone who was interested. While training in linguistics is not required for KT (good writing is done by non-linguists, and not all linguists are good writers), we do need linguists engaged in this work so non-specialists can be adequately informed about things that immediately impact them. All academic fields have their own jargon — ask a non-linguist about unbounded non-referential anaphora some time and watch the blank stare you get — translating this jargon and reducing structural complexity both informs the public about things that directly impact them and also removes a barrier to interdisciplinary research/collaboration.

EY: Perhaps one of the rare 'positive' changes emerging from the global pandemic is the popularization of medical literature in which we increasingly see references to multidisciplinary teams. How does a linguist fit into increasingly multidisciplinary medical research?

JW: One type of research we frequently do in our lab is called systematic review and meta-analysis. We run literature searches to identify every published article on a given topic (this frequently results in tens of thousands of abstracts that are manually reviewed, which get whittled down to a manageable few hundred that data are extracted from). Ever have to go through a spreadsheet and verify voice-onset-time or formant measurements? Incidence (new occurrences), prevalence (total afflicted population), and mortality (death rates) are not measures you might be used to dealing with, but it's still identifying relevant data, organizing it, and then analyzing it. From that point of view, I'm one of many research associates on the team. After the knowledge is created though, that's where my skills in language and communication come in. I facilitate understanding across the rest of our multidisciplinary team to make that information accessible to non-specialists who also need it.

EY: If Covid-19 taught us one thing, it would probably be to learn how to live with uncertainty. Can you however, despite this uncertainty, foresee how your field will develop over the next few years or decades?

JW: I think fields like medicine, community/global health, and epidemiology are going to become increasingly interested in having linguists be part of their teams, both for our wide range of transferable skills as well as specialty areas like (integrated) KT. Additionally, I notice that linguistics departments are increasingly turning out graduates with better understanding of statistics, computer science, and cultural aspects of language. These additional components of linguistic training mean that linguists can also perform advanced statistical analyses that almost any data-driven lab will need, can program artificial intelligence (AI) models to facilitate research (my lab recently hired another PhD-trained linguist specifically to work on AI algorithms that will search for relevant data for our studies as it is published), and understand the need to humanize individuals and the impact that labels can have on a person. So, I think a well-rounded linguistics graduate can have a future in medical research if it is something they are passionate about; perhaps we'll even see job postings specifically for linguists in this area in the future.

Reference:
[1] Crohn, BB., Ginzburg, L., Oppenheimer, GD. (1932). Regional ileitis : a pathological and clinical entity. *Jama*, 99(16), 1323–1329.

UNDERSTANDING ANTI-VACCINE DISCOU

AN EXAMPLE FROM THE ONLINE COMMUNITY *THE HIGHWIR*

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University of Nottingham

Anti-vaccine movements have been present since the introduction of vaccinations in the 19th century[1]. They are built around the belief that vaccines are extremely harmful and characterised by a mistrust of mainstream health professionals as well as the government[2]. The latest iteration of anti-vaccine movements is the resistance to COVID-19 vaccines: this movement has developed rapidly, with social media playing a crucial role in the dissemination of medical misinformation on a huge scale[3]. As reported in the latest studies such as Smith and Reiss (2020), this movement possesses the potential to do enormous harm through creating vaccine hesitancy and impeding vaccine uptake[4].

In this article, I aim to contribute to the understanding of anti-vaccine movements as a social phenomenon through a close examination of online anti-vaccine discourse. In the first half, we will delve into recurrent themes and linguistic patterns in anti-vaccine discourse. In the second half, we will discuss concrete examples from a corpus of comments on the website of the anti-vaccine broadcast *The Highwire*[5].

There are two main recurring themes in anti-vaccine discourse, both consisting of misinformation:

1. Vaccines are dangerous
Vaccines are believed to cause autism, idiopathic diseases and even death[6][7].

2. The 'truth' about vaccines is hidden
The reason the claimed dangers of vaccines are hidden from the public is believed to be connected to the economical profits of pharmaceutical companies, also frequently referred to as the 'big Pharma'[8].
The mainstream health professionals and the government are presumed to be corrupted by 'big Pharma' and are therefore also believed to be involved in hiding the 'truth'[6].

URSE:

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Focusing on social media platforms such as Facebook, Twitter and discussion forums, past studies have found two contrasting practices in anti-vaccine claims: one appeals to readers' rationality, the other appeals to readers' emotions.

The practice of appealing to readers' rationality can be seen in attempts to present information as scientific-looking. One example is the use of technical register, incorporating technical vocabularies and grammatical features such as nominalisation[9]. Another example is the frequent reference to one's expert status (e.g., scientist, doctor) to demonstrate the reliability of the quoted claims[9]. However, such claims are often either cherry-picked from a small number of scholars outside of mainstream medical research, or expressed in distorted ways[9]. For example, information is often expressed with greater certainty, with hedges in the original research articles dropped[10].

The practice of appealing to readers' emotions can be seen in anti-vaccine posts containing narratives of vaccine injuries or deaths. Uses of accusational language such as 'the murder of our children' were found[1]. The use of the possessive pronoun 'our' in particular, bears the assumption that the readers are also parents and establishes a relational process with them[1]. This use of possessive pronouns is also an important discursive strategy that creates a symbolic 'us' VS 'them'. In Numerato *et al.*'s (2019) collection of Facebook comments, 'our children' is construed as being 'poisoned and sterilised' by what is often abbreviated as 'them' – the 'big Pharma'

and the government, inciting deep mistrust towards them[3].

Having introduced these patterns, let us now look at a few interesting observations from a corpus of comments on the website of the anti-vaccine broadcast The Highwire I assembled[11]. The corpus contains 3,124 comments (112,514 running words) posted between July 31st and December 11th 2020.

The method I adopt here is corpus-based discourse analysis. Corpus linguistics entails the use of computational tools and statistical measures in the study of language[12]. It enables the identification of recurring linguistic patterns that are diffused in a large body of texts[12].

Our analysis begins with the keywords 'vaccine', 'Dr.', 'covid', 'Fauci' and 'truth'. Keywords are words which have statistically salient frequency in a study corpus when compared to a reference corpus[13]. They point us to the important concepts in our data, thereby affording a way into the large body of texts[13]. We examine the contexts these keywords appear in. This also entails generating the collocates of the keywords, which are words that co-occur with the keywords. Frequency information is presented in brackets after a word as an accessible way to provide a sense of the prominence of the word in our data.

The examples we look at can be broadly summarised under the titles: *we are experts*, *they are out to harm us*, and *the 'truth'*.

we are experts

The keywords 'vaccine' (397) and 'Dr.' (141) appear in commenters' attempts to construct expertise.

Three of the strongest collocates of 'vaccine' — 'got' (16), 'received' (12) and 'reaction' (8) — are largely associated with references to vaccine trials. This emphasizes the said experimental nature of the vaccine rollout. Examples of extracts containing 'got' and 'received' are presented below:

or 25 cycle threshold for those that got their experimental	vaccine	and the cycle threshold set to 45 (recommended by the
pandemic) for those who got the placebo. Like magic the	vaccine	has a 95% efficacy against the placebo.
symptoms)? There was no challenge test? How many got the	vaccine	and how many got the control? Do we know it
split? If say only 10% of the 43538 got the	vaccine	then in terms of catching covid19 they 've shown no
COVID–19, 10% infected were ones that received the actual trial	vaccine	(and only 10% of the trial received the actual vaccine).
vaccine (and only 10% of the trial received the actual	vaccine).	So, about 9 that had the vaccine still came down
received the actual vaccine). So, about 9 that had the	vaccine	still came down with COVID, and about 83 that received
that received the placebo… But wait. 0.205% that received the	vaccine	still contracted it and 0.209% in the placebo group… So,

It can be seen that alongside references to statistical information, highly specialised vocabulary in empirical experimentation such as 'threshold', 'placebo' and 'control' are used. By taking on such a technical register and questioning the validity of experiment design in vaccine trials, commenters position themselves as the experts.

Commenters also construct expertise selectively. The keyword 'Dr.' (142) is an important marker of expertise of social actors. In our data, it is mostly used in front of the names of the cherry-picked scientists who also hold an anti-vaccine view. It thus emphasises their expertise and makes their accounts appear more reliable. In referring to commenters from the mainstream medical community, e.g. Dr. Anthony Fauci — the main adviser to the US president on health issues, 'Dr.' is often dropped. In the 100 references to 'Anthony Fauci' or 'Fauci', only 10 have 'Dr.' in the front.

they are out to harm us

The keywords 'covid' (209) and 'Fauci' (100) appear in expressions of mistrust towards mainstream medical professionals and the government.

One of the most prominent grammatical collocates of 'covid' is the pronoun 'they' (44). It is used as an ambiguous reference to the medical professionals, the government, people who are pro-vaccine, or a combination of any of these. Extracts containing 'they' are presented below:

Thank you for sharing. Have they ever isolated	covid	19. What are we getting tested for?
your dad that is dying because they say he has	covid	as well as his pneumonia. he is on ventilator and
it possible that the virus they detect is not even	Covid	but a regular flu virus. It would make sense because
they wanted "Big Pharma." She claims they are pushing this	Covid	narrative because Fauci / Gates have a patent on Covid
it .Luckily, it was n't as deadly as they thought.	Covid	19, although it is present like the regular flu is
They diagnose any case in hospitals as	Covid.	It is being generated through algorithm and allegedly fed worldwide
on August 7, 2019 of pneumonia…a few months prior to	Covid	19. Kary Mullis was outspoken…particularly when they used the PCR
dept honcho in Switzerland just announced they would not mandate	covid	shots! Chilling that they have to even mention it.
heard They are optimistic about	covid	vaccine smh no thanks def not partaking in that bs
He told my neighbor that they all know that this	Covid	is man–made. He wondered why it is n't being discussed
he is 76 years old and if he gets the	covid,	they would just let him die because the meds are
die in a car crash you 're counted as a	covid	death. Talk about SCAM! They 're changing the law so

Commenters construe 'they' as agents of actions that are considered problematic and/or harmful. Commenters also discredit things 'they' said or thought. In phrases such as 'have they ever isolated covid 19'[11] and 'the virus they detect is not even covid'[11], the commenters directly question the competence of the mainstream medical professionals, conveying a strong sense of mistrust. In 'they would just let him die'[11] in particular, the commenter represents the mainstream medical professionals as those who intentionally harm people. This repeated framing of a complex group of social actors as 'they' forms an opposition between the anti-vaccine community and the general public.

'Fauci' is frequently represented along with a number of other social actors and institutions through the connective 'and' (26). Let's look at a few examples below:

swamped brains of people the likes of	Fauci	and any other puppet of the cha-ching
or his ilk. Sociopaths, like Gates and	Fauci,	and big business, big Pharma or even
Tony	Fauci	and Bill Gates should be tried for
Dr. Judy Mikovitz. She worked with both	Fauci	and Birx and claims that her lab
n't force a vaccination. That is why....Dr.	Fauci,	and CDC, Bill Gates and the WHO
a pathway to an AIDS cure but	Fauci	and friends confiscated all her work and
does not bode well for people like	Fauci	and Gates.
about COVID-19 and clearly he has failed.	Fauci	and Gates have proven to be more
men intervene... How stupid are we really??!!	Fauci	and Gates have the permission to go
the vaccine and therefore a target for	Fauci	and Gates. It became the subject of
money. Trump has nothing to gain financially.	Fauci	and his cohorts stand to make millions
Atlas is a genius and will crush	Fauci	and his equally corrupt sidekick, Birks. Del
please address the fact that if they(	Fauci	and his hitler youth) can n't test
companies who stand to make billions gives	Fauci	and his ilk more legitimacy than their

In these examples, 'Fauci' co-occurs with 'big Pharma', 'Bill Gates', 'CDC' and 'WHO'. This association of business people and health organisations reiterates the conspiracy theory that health professionals and 'big Pharma' are both involved in hiding the 'truth' about vaccines. Phrases such as 'Fauci and his hitler youth'[11] and 'Fauci and his ilk'[11] represent Fauci as the lead in the conspiracy and other health professionals as equally malicious. The choice 'hitler youth' in particular, construes health professionals as naive and blind followers indoctrinated by the idea that vaccines are safe. The associations these phrases form serve to discredit mainstream health information.

the truth

A final interesting observation lies in how truth is construed. The keyword 'truth' (167) in our data refers generally to a set of misinformation such as the harmful effects and the economical profits behind vaccines. It is frequently presented in parallel with other concepts through the connective 'and' (27). A few examples are presented below:

thank God we have a Health and	Truth	soldier like you fighting for us. Very
proving that REAL leadership, courage, integrity, and	truth	are very much alive! Thank you for
He is part of your preparedness and	truth	solution.
a rebut to the common sense and	truth	of it all. They are so hell
in our nation, information, free speech and	truth.	God bless you all. Your Jewish fan

In these examples, 'truth' co-occurs with qualities such as 'leadership', 'courage' and 'integrity' and concepts such as 'health' and 'free speech'. These frequent co-occurrences of concepts can form associations between anti-vaccine claims and positive concepts, constructing these claims as valuable and important. The word 'truth' is also parallel to 'common sense'. This establishes the set of misinformation as something that should be known by the majority of people. In doing so, the commenters not only represent anti-vaccine claims as mainstream, but also condemn the majority of people for not having 'common sense'.

By unpacking the language patterns in anti-vaccine discourse and how anti-vaccine claims appeal to people, we can gain a better insight into how to address and dismantle such misinformation. From our data, we observe that anti-vaccine discourse can appear extremely scientific-looking, with claims filled with statistical information and specialised vocabulary, supported by seemingly authorial sources. This makes it even more difficult for readers to distinguish pseudo-science from science. This suggests that apart from approaches such as blocking links to misleading content on social media[1], targeted responses are also needed to dismantle individual claims. More prominently, mistrust towards health professionals is clearly visible in our data. This suggests that more work needs to be done in developing trust in the general public towards health professionals.

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Language Barriers in Medicine

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The great diversity of languages in the world, commonly considered amongst the linguistic community as positive and fascinating to study, can be a problem in countries in which bilingualism is not at an adequate level amongst the population. The US Census Bureau reported that only 20% of people in the USA can speak a language other than English[1]. However, there is a desperate need for increased communication amongst people of all backgrounds sharing a country; this is particularly important in circumstances when being able to communicate efficiently and effectively with someone is of the utmost importance, for example in a medical setting.

Being able to communicate with patients to a reasonable degree is required in hospitals so that doctors can understand the ailments that patients are suffering from and treat them accordingly. However, there have been a number of cases in the USA in which language barriers have prevented this; consequently, patients have suffered or even lost their lives. This is the very circumstance that resulted in the death of a 9-year-old Vietnamese-born girl, Ms Tran.

Ms Tran was admitted to hospital due to a rapidly spreading infection. The attending doctor was not able to communicate with Ms Tran as she was very unwell and since her parents could not speak English, the doctor required help with communication. As the doctor did not bring in a translator, the onus fell onto her 16-year-old brother, a minor, to interpret medical information and pass it between his parents and the doctor in both Vietnamese and English. The doctor misinterpreted the infection that Ms Tran was suffering from for gastroenteritis, a common stomach complaint, and prescribed medication accordingly. Unfortunately, due to the infection that Ms Tran was actually suffering from, the medication she took reacted badly, causing her

to have a cardiac arrest which she died from. Had the doctor sought the expertise of a professional translator, Ms Tran would likely still be alive.

Using a family member to interpret in a medical setting rather than a professional translator is argued against by both researchers[2] [3] and medical professionals[4]. To maintain high standards and support patients, translation in a medical setting should be "neutral and passive" and provide as unbiased an un-edited account when relaying information[5]. There is a plethora of anecdotal evidence which demonstrates that it is difficult to maintain neutrality when translating for one's own family. One common attitude consists in translating only selected elements which are subjectively judged important, while omitting other parts of the patient's or the doctor's discourse because they seem superfluous: "okay, that I won't translate"[6].

Had a medical translator been used in Ms Tran's case, they would have been able to understand the medical terminology and effectively inform Ms Tran's parents. Medical terminology is highly specialised and not subjective; professional translators should have an intimate understanding of the meaning of the terminology in both languages including any differing semantics that could cause confusion[7].

Having this knowledge and ability is particularly important in time-sensitive settings where fully explaining every piece of terminology to the interpreter, like Mr Tran, may not be possible. However, despite a clear requirement for professional translators in hospitals, they are not being called upon as frequently as they should be. One cause of this is the overall cost of translators. If one translator has a high level of proficiency in one, maybe two languages, many, many translators would need to be employed in every hospital to accommodate the number of languages which doctors may come into contact with

on a daily basis. According to a systematic review of hospitals in the USA in 2020, using an interpreter increases both the duration of the patient's stay in hospital and the overall cost of treatment[8]. Therefore, finding alternative methods of communicating with carers or patients themselves can be a priority for some doctors, even if this means using an underaged family member.

An alternative to human translators can be found in computer translation programmes. Software like Google Translate and Babelfish can be effectively integrated into hospital settings. Using such software appears to work well to increase the rate of communication between patients and medical staff[8]. Therefore, it is possible that encouraging translation software use in hospitals will improve the wellbeing of patients in terms of their stay duration and overall costs. A study found that use of Google Translate to break through a language barrier was effective, allowing doctors to communicate with patients; however, they concluded that whilst it was an effective tool, it should not be trusted as the only means of communicating medical information unless no human translators are available or it is a particularly urgent situation due to the risk of mistranslation when relaying highly specialised information[9].

Clearly, having one person who specialises in a single language who can establish a positive relationship with a patient and earn their trust would go a long way for patient satisfaction and comfort. But is it worth giving up the large range of languages which software can translate in favour of a human translator? Or would a hybrid combination of both translation methods be effective in ensuring situations like that of Ms Tran are never repeated again?

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BEHIND THE
BOOKSHELVES

WHAT IS LANGUAGE INCLUSIVITY?
A LOOK AT GENDER PRONOUNS IN EUROPE

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Language inclusivity has been one of the most discussed themes in recent years. In fact, greater recognition of gender diversity on the web and in mainstream media has challenged the traditional static and binary models of gender identity and caused a paradigm shift in the scholarship of language, gender, and sexuality[1].

> But what is inclusivity and why is it "hot tea" in this historical period?

When talking of inclusive language, we refer to a use of language that shows respect and open-mindedness, without discrimination of any person, considering their sexuality, gender, race, physical and mental ability and age. The theme has become more relevant and visible since the introduction of new pronouns — or new meanings for already existing ones — for transgender and non-binary people. Pronouns are functional elements that replace full noun phrases, and, in many languages, they also convey information like the gender of the referent. However, their functionality means they are resistant to change, and it is unusual for languages to develop new pronouns in a short time[2].

We can clearly see there is a very wide gap among people's attitudes on the inclusive use of pronouns, especially on the Internet and social networks such as Instagram or Twitter: a rising number of social media users are adding their pronouns, for example *she/her*, *he/him* and *they/them*, to their bio to "come out" on the World Wide Web and, via the internet, also in real life. As LGBTQIA+ allies, this use of pronouns helps to normalize them and to spread awareness about gender identity.

On the other hand, there are also people who do not really understand the use of these pronouns and find them useless[3].

'They' has been used as an epicene pronoun with indefinite or generic meaning from the 14th century by many important authors, such as Chaucer[4] and Austen[5]. Despite the grammarians who described it as "bad grammar" in the 18th century[6], its singular use is still evolving. In 2019 the Merriam-Webster dictionary declared 'they' word of the year and added to its definition: "used to refer to a single person whose gender identity is nonbinary"[7].

According to The Guardian[8], it is normal to use the gender-neutral pronouns *they/them* when we do not know the gender of the person we are talking about, when we want our discourse to refer to all genders, and now to speak about non-binary people, who want to "live outside the gender duality"[8]. The Guardian proposes a very easy guide to this new way of speaking with and about non-binary people, with tips such as not assuming

people's gender.

In Italy there is a completely different situation: although Italian has been strongly influenced by Latin and ancient Greek — which had the neuter in their grammatical gender system — it no longer has a neuter pronoun and neuter endings and many people do not understand why we must re-introduce an "old, ancient and hard-to-learn"[9] system. The online newspaper *Vice* has written on the attitude in Italy towards language change and how many people try to create excuses for their resistance to small changes in support of inclusivity, such as "Italian language is made like this" or "is this another trend which will be lost in a few weeks?"[10].

There are some proposals for a neuter ending: the introduction of the "schwa", a vowel standing in the centre of the vowel quadrilateral (IPA: /ə/), used as a neutral inflection for non-binary people or in the plural form when we are talking to a mixed crowd or do not know the gender of the interlocutor. There are also other solutions proposed on the Internet, such as <x> and <*> (graphemes not matched with phonemes), but unfortunately they are not practical in the spoken language and only function as a graphic workaround[11]. While in Italian personal pronouns can often be omitted, some non-binary people decide to keep using *lui* "him" or *lei* "her", and some proposals for a neuter pronoun include *ləi* or, in writing, *lxi*.

Another example of the lack of attention to gender inclusivity by many Italian speakers is the tendency to use the overextended masculine ending in the professional field: that's why there are many debates on changing the vocabulary, in full respect of grammar rules, by simply using the feminine inflection or other solutions to refer to all people (e.g., *ingegnera*, "engineer" (F), instead of *ingegnere*, "engineer" (M)).

In other languages where the neuter exists, there are no — or few — problems in the introduction of it with new meanings: in German, for example the language has a grammatically neuter gender (e.g., *Es*, "it") and gender neutral pronouns are becoming more used and well-known: some like *sier*, *ersie*, *er_sie/er*sie/er:sie* are made up from *er*, "he", and *sie*, "she" or "they". Others like *x*, *xie*, and *die* have an analogous meaning to the English "they"[12]. The editorial staff of *Duden*, the most important and updated dictionary in Germany, said "the German language is formulated more neutrally day-by-day, as we can see by the growing use of words as *person* or *human* or reformulations to give a 'neutral tone' to the sentence"[13].

Sweden is one step ahead: in 2015, they introduced the neutral gender pronoun *Hen*, taking inspiration from one of its neighbouring countries, Finland, which has always had the pronoun *Hän* (singular "they")[13].

French has a binary gender system like Italian, and gatekeepers of France's highest authority on language, the *Académie française*, say gender-neutral pronouns pose a "deadly danger" for the language[14]. However, in inclusive and progressive spaces other options are developing for people who consider the *il* "he" or *elle* "she" pronouns "too much sectorializing"[15]: *iel* is the most used neuter pronoun and it is a hybrid of *elle* and *il*; there is also an alternative spelling — *yel* — pronounced in the same way. People who stay outside the male/female spectrum also have *ul* and *ol*; *ael* can be easily accorded to all words, *im* and *em* are a variation for people who respectively find themselves nearer to the male spectrum or the female one. Finally, we have *ille* and *el*, pronounced very similarly to *il* and *elle*[15]. All these pronouns mean "they" in a certain interpretation, but they have no direct translation in other languages but French.

We have seen many examples of language change in the approach to inclusive language, but also some of its conservation: if a language does not change, it will not have a long life; introducing these new words and new uses for already existing pronouns in our everyday language is the choice we should consciously make to be more inclusive. Change is possible if we all make the effort to build a path to equality.

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Efficient Communication:

The Importance of Awareness

Federica Furchì is a student of Modern Languages and Cultures at the University of Calabria. In this article, she discusses communicative efficiency in light of Vera Gheno and Federico Faloppa's book Trovare le parole. Abecedario per una comunicazione consapevole[1].

As human beings, language and communication are two central issues in our lives. We cannot avoid using language, we often talk to ourselves, and we even do it when we are dreaming. Everything we do is related to language. Its importance has also reached social media, giving birth to new phenomena that we must study and acknowledge as interlocutors and prosumers[2] of the internet. While the functions of language and how communication can be efficient remain central issues for our understanding of language, new media highlights the need for more awareness: to make the online spaces we inhabit as respectful and inclusive as possible, we need to become conscious speakers. Vera Gheno and Federico Faloppa, two sociolinguists attentive to what regards the social and relational consequences of our words, talk about it in their new book[1] by explaining a key concept that addresses the issue of inclusive language for each letter of the alphabet, starting from A for *ascolto*, "listening", through Z for *zen*. While far from the original meaning, "being zen" colloquially refers to dealing calmly with situations of disagreement, and it is through listening that interactions are built up, the bases for managing conflicts are laid, and ultimately participation is achieved.

Functions of language.

Since we cannot live without language, as speakers, we should be interested in it. The truth is that we speak or sign, but most users of the language do it intuitively. That means that often we don't even ask ourselves why we say something in a certain way: we have implicitly learned to do so, and we hardly doubt what we say and the way we say it. That is why the figure of the linguist is essential to make the intuitions of a speaker explicit. Going back to the 20th century, linguist Roman Jakobson elaborated a scheme that shows the six elements and functions of language[3]: the addresser, the addressee, the code, the context, the channel, and the message. It is not easy to find a hierarchy among the six elements and functions, but we can find some patterns that are frequently used. A conversation cannot exist without the presence of an addresser and an addressee; on the other hand, we need the code, which is the language through which we communicate, a context that is fundamental to understand what is left outside of the conversation, and eventually the channel and the message. To understand language and make 'good' use of it, Gheno and Faloppa propose the "DRS method": doubt is the attitude to adopt when we are the addressees of words and information – we are not all-knowing, we should take everything with a pinch of salt and be aware of our knowledge limits; reflection should be our attitude as addressers, so as not to find ourselves unconsciously accomplices of destructive messages; silence is the choice to make when we are not sure we have something to say, or if we are uncertain that a message makes sense and is constructive[1].

But, based on how communication works, what role does ambiguity play?

As speakers, we frequently find ourselves in situations of ambiguity, that is when things are left outside of the conversation. outside of the conversation. We could argue that efficient communication ought to be as easy and clear as possible because its main aim is to vehiculate a message with minimal effort. So, what is the role of ambiguity? According to Chomsky[4], every communicative act leaves space for vagueness: we often take for granted that our addressee can understand what we are inferring. Indeed, this can be a desirable feature of the language, since it increases efficiency by letting speakers express their message while leaving out information that can be inferred from the context. Instead, Gheno and Faloppa, talk about ambiguity when discussing rhetorical figures and hate speech: in particular preterition, from the Latin *praeterire* "to omit" is the figure used in expressions such as "I'm not racist, but..." or "I'm not sexist, but..." which play on ambiguity by declaring no desire to talk about a topic but evoking it very clearly[1][5].

This use of language tends to take responsibility away from the speaker, not holding them accountable while perpetrating discrimination and linguistic othering.

How does communication work on the Internet and on social media?

When it comes to social media, the way we communicate changes significantly: the channel through which we communicate is not as immediate as when we talk in real life. For instance, if we want to write something on Twitter we must not go beyond the maximum number of characters; even a conversation during a (video) call changes considerably compared to what happens when we are speaking face-to-face. Over the last years, especially during the pandemic, we witnessed how social media use has increased[6]. This increase has had considerable consequences for communication. Nowadays, the internet is our primary channel of communication, and interest has risen in how to make communication on the internet more effective. Terms such as "storytelling" might sound familiar to us: the use of engaging and personal narratives by organisations with the intention of empathising with the audience; it has become a starting point for successful marketing in the 21st century. The way social media has given rise to a whole new method of communication does not stop at storytelling: conversations are extremely quick, practical, and intuitive. As a result, the words we use require greater attention, both as speakers and linguists.

Words are important.

Given that we base our relationships on communication and words, we must say that now, more than ever, words have huge importance and must be used with care: the weight of words has increased by the multiplication and the pervasiveness of the media and of social networks[7]. Detached from physical contact between people, words become uncontrolled, and their improper and sometimes aggressive use is fuelled, often giving birth to the so called "hate speech"[8] phenomena. Starting from these premises, Vera Gheno and Federico Faloppa aim for the reader "to regain possession of words, their meaning, their implications, their communicative capacity. To make a conscious use of them"[1].

When talking about the mass use of social media, Umberto Eco's view is often brought into play and negatively oversimplified to the idea that Internet has given everybody the right to speak, widening a space that was previously reserved for people who worked in media[9]. In reality, the matter is way more complex: as Gheno and Faloppa highlight, the immense potential of social networks lies in giving a public voice to those who did not previously have one, often creating potentially virtuous cycles of information and exchange of ideas. At the same time, the main problem is that no one has taught most people how to manage the communicative complexity that comes with a hyper-connected world. Learning to live and communicate sensitively and efficiently implies cognitive effort that not all people — speakers or listeners, writers or readers — are willing to make[7].

As more people are able to give their opinion through social media, the misuse of words has increased, as users of the internet we ought to be respectful towards each other, pursuing a conscious use of the language. We do not need to know the morphosyntactic rules of our language in depth, but we do need to be educated both linguistically and emotionally, and we need to develop a greater awareness of what we say and write, thinking about the effects of our speech acts. This awareness is fundamental, because the quality of our media landscape depends on each individual's behaviour: if we all have a megaphone, we need to acquire awareness in using it, for ourselves and for others[10].

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BEYOND THE PAGE

Teaching Computers to Understand
An Interview with Ines Montani

Amanda McHugh (MPhil Researcher in Linguistics at the University of Cambridge) speaks to Ines Montani, co-founder of software company Explosion, about Natural Language Processing, and where linguists fit into this industry.

Ines Montani is a developer specializing in tools for AI and NLP technology. As well as being a Fellow of the Python Software Foundation, she's the co-founder of Explosion[1] and a core developer of spaCy[2], a popular open-source library for Natural Language Processing in Python, and Prodigy[3], a modern annotation tool for creating training data for machine learning models. Find out more her on her website[4], or on Twitter[5].

Somewhere between pure Computer Science and pure Linguistics, there is Natural Language Processing, or NLP. Ines Montani, co-founder of NLP software company Explosion, explains its importance: "as humans, we produce so much text; we produce so much more text than we can read, and at some point, if you have a lot of text, you always want to find out more about it that goes beyond just keyword search. You want to find out who does what to whom, what companies, concepts and ideas are mentioned, and what a text is even about." The best means of handling these vast amounts of data is using computers to process it, plugging data in to retrieve the underlying rules and themes hundreds of thousands of times faster than it would take a human. "It's very useful in a lot of applied industry contexts," Montani explains. "Companies need to categorise and analyse emails, people need to analyse text in the news, text on the internet. There's so many areas: everyone has text these days, and so nowadays it's quite feasible to teach a computer to at least make predictions or guess something about these texts with a reasonable accuracy."

Despite learning to code at a relatively young age, it was not until after university that Montani considered NLP as a career. "I started programming when I was maybe eleven, and I discovered that Microsoft Word could export websites and I got really into that… those were the early days when you could just look at the source code of an existing website and see how it's done. So, I've always made websites, but I actually didn't go into computer science when I was at a point in my life where I had to choose what I wanted to do… if you'd asked me at the time, I wouldn't have seen myself doing what I'm doing now." Her university experience, studying a combination of Communication Science, Media Studies, and Linguistics from the age of 17, was disillusioning and disappointing, and she did not enter immediately into NLP afterwards. "I worked in media for a while actually; I worked in advertising, and marketing and sales, and kind of by coincidence, I met my current co-founder Matt. He has a much more traditional background…

Language:

he did Linguistics as his undergrad, then was able to get into a PhD in Computer Science, and he was at the time working on spaCy and building a library for doing Computational Linguistics. I was doing some front-end developing on the side at the time. He said, 'I've got this cool project and maybe we can work on this together,' and his idea was that he wanted to have an interactive visualiser for syntax where you can see all the dependency trees, and what the machine learning model predicts, and look at it. I knew exactly what it was about and said 'nah, sounds kind of boring', but I changed my mind very quickly once we started working together and I got more deeply involved with NLP. I started contributing to spaCy shortly after, which was very new at the time. The idea was that it could always turn into a business; there's a lot of demand for that type of technology, and it's finally starting to become useful. So, that's when we came up with the idea for Explosion and focusing on building developer tools for NLP."

So, what work does Explosion do, and how are the products different from other NLP products on the market? "We don't actually build applications: we build professional tools that developers can use to build all kinds of applications for text and language." spaCy and Prodigy both focus on putting tools into the hands of NLP developers, to allow in-house work on NLP projects. "There are a lot of other tools in the NLP space that have been around for a long time that are more geared towards research and comparing or standardising different algorithms," she continues. "spaCy was designed to be used much more in products and focus on the developer experience, being efficient, and a good design that's both easy to use but also very extensible if you want to do more complex stuff and customise things. Similarly, Prodigy was also very much designed as a developer tool, and at the time that was very new... we really saw that everyone who gets serious about NLP usually wants to train models specific for their use cases, because that's where a lot of the value is. Yeah, you can just train something or download a model off the internet that does some parts and that's often quite helpful, but usually the really interesting stuff is very custom to what you're working on... and that's usually what really matters."

Before products such as these, NLP work looked very different. "Most people would just throw their data on Mechanical Turk and have some people label it who got paid $5 an hour, and they wondered 'why is my machine learning model so bad?'. I do think we'll probably look back at this the way we now look back at people trying to outsource programming in the nineties… the model and the data are the core of your application, so you also need to iterate on that. You can't just expect that the first thing you do is right, because that's also not how you do anything… you want to be iterating on your data the way you're iterating on your code. Often, you have an idea that doesn't work, so you try out something else, talk to the people who actually understand the domain and the problem better, try out another thing, train your model… that's what the process is like. We built a tool that we'd like to use and really lets developers program with it." Prodigy is downloadable software that runs on a developer's computer, meaning no sensitive data is uploaded to the Internet. It can also be customised using Python scripts. "It's really this developer-focused workflow… I do think there's a lot of potential for tools that increase developer productivity, because that's ultimately what's going to make the biggest difference."

NLP as a field is made up of a variety of different people; "I would say that there's not one typical NLP developer, which is a bit different from traditional software development, where people often have very similar backgrounds. NLP combines people from all kinds of different backgrounds, because often you start with a problem that you want to solve, and then you get into the technology and pick up the tools for it. It's actually also where we see projects being most successful." There is a clear place for linguists interested in entering NLP: "having some background in Linguistics can help a lot, because it gives you this extra context of reasoning about what even makes sense and what doesn't. If we want to teach computers to 'understand' language, we need to understand how language works — and linguistics is a big part of that. We sometimes see people come in with a software background and say 'I feel like there's this kind of secret sauce that I'm missing, there's this little bit that I don't get, I feel like I could get more out of this but I don't know how because I don't understand enough about how language works.'" But it is not the case that linguists and com-

puter scientists should be entirely separate within the field. "Ideally," she explains, "it should be the same person. I don't think it's always very good to have a 'pet linguist'. The best NLP developer is someone who does know about linguistics, knows about programming and building efficient software, and also has some knowledge about what they're trying to do and solve."

She continues to explain that although programming is an important part of NLP, it should not be the barrier to linguists who are keen on entering the field. "I'm not saying programming is trivial, but I also think the programming itself isn't what's hard. There does seem to be this very elitist idea around being a programmer, a developer, a machine learning engineer, but I think if you've been doing academic work, if you're used to reasoning about how things should be solved and how things go together, you can learn to program. That's not what should be blocking you, and I think there are lots of resources. Python is a good language that's relatively easy to pick up, so you can get productive pretty quickly. A lot of the things that are "hard" aren't usually about the programming itself being difficult to understand: they're often very arbitrary and don't always make sense, things you just have to know, and that you'll inevitably pick up along the way. But I think some of that is getting easier with better tooling, editors, and development environments getting better. If someone's coming from a Linguistics background, I would imagine you already have ideas about what you want to find out." Using this, she explains, linguists can create better NLP software to cope with faster computers and more text.

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LET'S TALK:
AN INTERVIEW WITH DAVID CRYSTAL
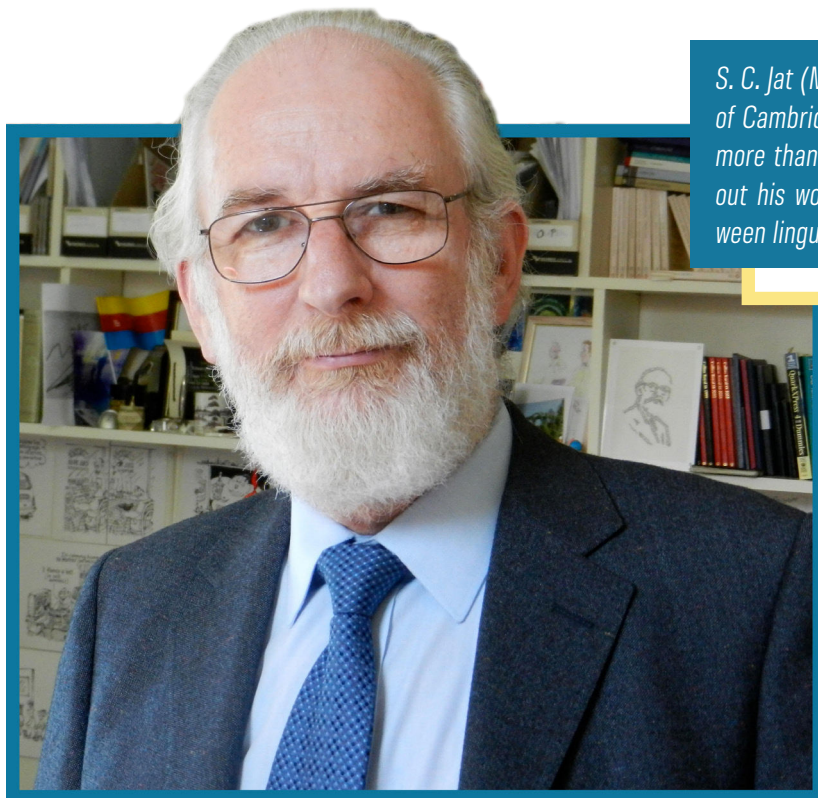
S. C. Jat (MPhil Research student at the University of Cambridge) speaks to David Crystal[1], author of more than a hundred linguistics-based books, about his work in the field and the connection between linguistics and theatre.

Most linguists will have come across the *Cambridge Encyclopedia of Language*[2], or at least one of the many books authored by David Crystal, who has been involved in numerous linguistic projects as a writer, editor, lecturer, and broadcaster. In *Just a Phrase I'm Going Through: My Life in Language*[3], Crystal details the various aspects of linguistics he has worked in over the years. His books cover a large range of linguistic fields, from discourse to phonology to historical linguistics. When asked about which area of linguistics he finds particularly fascinating, Crystal thought that although "all of them" interested him, he was drawn to "language change in particular. Whatever a language was like yesterday, it is different today, and will be different tomorrow. That's the best bit, for me."

Crystal's work largely looks at the English language, both its history and its usage, including pronunciation and grammatical nuances. It was "the literature originally," which drew him to dedicating his research to English, "dating back to teenage years, when I did my first creative writing. And then the enthusiasm and linguistic insights from my lecturers at University College London, especially Randolph Quirk. I still try to maintain a lang/lit balance in everything I write." He also adds that "more generally, the new horizons that have arrived as a consequence of English becoming a global language, where variation complements the language change" has made the language his chosen focus. Even so, Crystal points out that there are still "many languages of the world where we still have little or no descriptive information — some estimates suggest that about a third of the world's 6000 or so languages still await a good linguistic description."

Other than the more mainstream areas of linguistics, Crystal has also been active in Shakespearean theatre, taking on the role of Master of Original Pronunciation at the Globe between 2004 and 2005. Regarding the significance of linguistics in performance arts, he "can't imagine many theatre directors finding Chomskyan theory significant for the stage — though I wouldn't be surprised if Tom Stoppard wrote a play about it!" Still, he maintains that "it's a developing area of applied linguistics (AL), in my view. And, as with AL in general, the nature of the problem to be solved depends on the practitioners. At the moment, it's original pronunciation (OP) [of earlier English productions] [4] that has attracted most interest, but there's

a great deal in stylistics of potential significance. And don't forget that practitioners need to have basic information about language, especially when performing historical texts — see our website[5] for an illustration, or the original book[6], widely used now in rehearsal rooms."

Discussing the connection between everyday discourse and scriptwriting, Crystal thinks "it's important to relate the realities of everyday conversation, with its uncertain fluency and randomness of subject-matter, to the kind of thing we see and hear in scripted conversation, which is organised with a creative intention in mind." In his 2020 book, *Let's Talk*[7], he dedicates a chapter to the interaction between natural and scripted discourse, which he summarises briefly: "Even the most colloquial scripts, such as [Harold] Pinter's, display a considerable distance from what goes on in casual chat, in (for example) their use of comment clauses (e.g., *you know*, *mind you*, etc.) – which of course is as it should be. I think a play which represented everyday conversation realistically would be somewhat dull! But an analytical awareness of exactly how conversation works would maybe help writers see more clearly what they are doing when they shape it to express their artistic purpose."

In the last two years, Crystal, who has been based in his home in Holyhead, North Wales since 1984, has been working on "personal projects that no mainstream publisher would ever be interested in", a couple of which he has "been able to put up online", including *Tales of the Linguistically Unexpected*[8], which was published by his own publishing company in July. Also, his "various websites take a lot of looking after, as they're in a continuous state of development. So, this year I added an audio dimension to the Shakespeare's Words website[5], and there'll be something new to add next year. And I'm currently adding an Old English set of pages and recordings to the OP website[4]."

So how does he choose what part of linguistics to write about? "People tell me. Almost everything I've written in book form has been a response to a question someone has asked, or the result of a discussion over what gaps there are in the market. For example, my *Cambridge Encyclopedia of Language*[2] began life when a nephew asked me: 'Is there a book about language with pictures in it?'"

In terms of comparing academic to more commercial writing, both of which Crystal has had extensive experience in, he says that "that distinction isn't so easy to make these days, when universities (and research proposals) are required to show that they are making an impact — which often means a book aimed at the general public." According to him, "they are different kinds of enjoyment: the joy of discovery in a research project is a beautiful experience, but so is the joy of reaching out to a readership (or listenership) that is curious to learn about language." His tips for the best way to inspire interest in the general reader about linguistics? "Focus on the topics that they already have an interest in — and I've never met anyone who has no interest in language — accents and dialects, child language, etymology, place names, personal names, and so on. Then, crucially, write or talk at the right level, and take the time to check. When I wrote *A Little Book of Language*[9], aimed at 12-year-olds and above, I got a 12-year-old to read the typescript for me, and it was invaluable feedback."

For the linguists looking to pursue academia, Crystal gives some advice: "To my mind there are two bottom lines. Check your communication skills, to make sure you can handle the demands of lecturing. And check your research temperament, by carrying out a small-scale project, either of your own devising, or one suggested by a lecturer or by something you've read. Did you enjoy the experience, and wish you had more time to go further into it? An intermediate postgrad step is the usual way to test all this. Oh, and start collecting language stuff — local usages, newspaper articles, anything that energises you linguistically. The *Tales* book I mentioned above started out in exactly that way."

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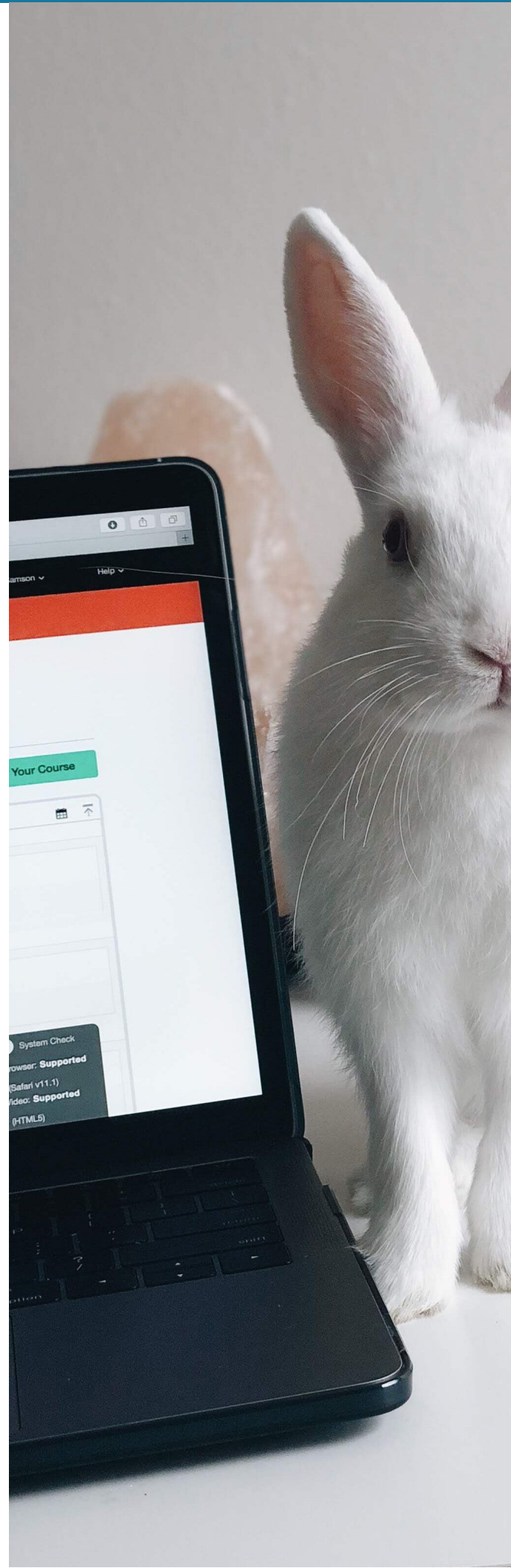[9] Crystal, D. (2011). *A Little Book of Language*. New Haven: Yale University Press.

THE AGES

THROUGH

More Similar Than We Think:
A Case for Animal Language [ft. bats]

Romany Amber, a second-year Linguistics student at Cambridge, discusses how some key features of language are also found in bat communication.

*A*nimal Communication is given a sub-chapter in many an introductory linguistics textbook, invariably following the same structure: start with a neat list of *human language properties*, then cherry-pick examples of how *some* animals meet *some* conditions; conclude that human language is nebulously but significantly *more complex* before fading out with questions about what this tells us about language evolution/psychological modularity/human society and fundamental human nature. *Mic drop.*

Such box-ticking approaches to the question of whether language is unique to humans seem to remove some messier elements of the debate to reach a neatly trimmed, Tweetable conclusion. Some more problematic considerations are edited out: for instance, the fact that human language is a subset of animal communication (humans are, after all, animals); the greater complexity of communication in human societies than animal ones[1]; the hazy boundary between what is *language* and what is only *communication*[2]; that we are only using a tiny minority of human languages that have ever existed as our frame of comparison[3]; the empirical impossibility of us deciphering the grammar and function underlying animal languages which we can't fully understand[4]. Most importantly, too little acknowledgement is given to the fact that we are inherently biased in this investigation by virtue of being humans, especially with how much we take for granted that there is a clear-cut divide between the linguistic ability of humans and animals.

The more research we do into animal communication, the more human-like it seems. Not only are many animal species capable of intentional communicative behaviour, but — as I shall discuss below — many structural properties previously thought to be unique to human language have been found in the communicative behaviour of animals. I'm going to focus on recent research into bat communication, but this choice is more reflective of my affinity for little flappy-goth-mice than any rational reasoning — whales, songbirds, bees, or vervet monkeys can all be used to make a similar argument[5].

Like humans, bats are highly social animals, and use language for a variety of social functions, including interactions between mothers and pups (yes, baby bats are called pups), foraging, attracting a mate, and territorial defense[6]. The interaction between various species of bat has disproven many proposed uniquely human language characteristics. For example, there's evidence they undertake Vocal Production Learning — they learn to produce calls by imitating other bats and adjust their calls to improve their imitation — which is a relatively complex process only found in a handful of animal species[6]. This enables spear-nosed bat (*Phyllostomus discolor*) pups to make matching calls in response to a call from their mother, so they can be easily identified[6]. It's also been shown that exposure to adult bats' vocalisations influences the vocal development of young Egyptian fruit bats[7], and there is evidence that bats adopt new 'dialects' from their colonies, rather than inheriting one from their mother[8]. The process of greater sac-winged bats (*Saccopteryx bilineata*) learning sex-based territorial songs has been described as "in a fashion reminiscent of... human infant babbling"[6] in that pups learn how to make the whole range of calls in infancy, then specialise to the ones relevant to their sex and individual 'signature'. Vampire bats (*Desmodontinae*) have also been found to undertake turn-taking at a similar speed to humans, another skill which is supposedly unique to humans as it requires a demanding set of social awareness and processing skills; this has also been observed in songbirds and some primates[6]. Perhaps most excitingly, there is evidence for some form of syntax in Moustached Bat (*Pteronotus parnellii*) calls: this includes 33 discrete 'syllables', which each have substructures and can be combined in multiple ways[6]. This calls into question whether duality of patterning is in fact unique to human communication, when it is so often at the centre of arguments for human linguistic uniqueness.

If we define what *language* is based on a discretely itemised list of its features, these features can be readily found in animals through further research into animal communication. We have attempted to preserve language as exclusively human by adding more items to the list, but this only feels like a frustrated parent parrying their toddler's incessant questions with "Because it *is*!" The 'uniquely human' features we are left with tend to focus on differences in social sophistication between human and animal communication (e.g., to make a particularly awful pun, persuade someone to buy your brand of mouthwash, or spectacularly win a rap battle; versus to attract a mate, to feed, to warn of predators). However, differences in the social complexity of the situation are impossible to prove: cross-species linguistic interaction is limited, so what makes us think that we can understand the exact communicative function of, say, bat language? This isn't to say that bat communication is necessarily the same or even comparable to human communication; it's just that we need to stop oversimplifying how we describe the similarities. Rather than scrabbling around for specific, concrete features shared by human languages, surely a more promising approach is to consider that human and animal communication differ by degrees, rather than in kind.

In order to further our study in animal and human communication, we need to acknowledge the limitations of our own perspective, as human beings with restricted knowledge of communication in species' other than our own. In a place where animal exploitation and perception of human superiority is a tenet to how all of us live and see the world, we must be prepared to acknowledge that animal communication and human communication are a lot more similar than we would like. Searching specifically for uniquely human properties of language is letting our situated perspective cloud our scientific approach. Bats alone show us that many properties we may have considered to be uniquely human are found in other species, so it seems reasonable to speculate that if we scoured the whole animal kingdom, we will only find more and more similarities between the communicational systems of human and non-human animals. For example even recursion, which is central to arguments for linguistic uniqueness, has been observed in the birdsong of European Starlings (*Sturnus vulgaris*), whose songs show recursive centre embedding, and who have shown the ability to recognize grammaticality in new instances of song[10]. Features in human and animal communication appear to share considerable functional and structural commonalities, and as more research is conducted, I suspect that they will only converge more closely.

Mic drop.

Notes and References:

[1] For example, human society involves the coordination of more individuals across greater distances, and humans routinely engage with abstract concepts such as truth, forgiveness, and money.

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From Manifesting Justice to Langua
Ideological Underbellies of the Debate on Animal C

Do animals have language? *Kitty Liu, a second-year Linguistics student at Cambridge, explores how answers to this question never stray far from our beliefs about the moral and political status of animals.*

Over the ages, philosophers, linguists, and psychologists have given various answers to the question *Do animals have language?*. Their responses always mirror the extent of our anthropocentrism. Different characterisations of animal communication have been used to deny non-human animals the capacity for thought and even consciousness, while others have claimed that animals' use of language qualifies them as political agents who should be accounted for and allowed to participate in our political structures[1].

ARISTOTLE

Aristotle's verdict was that while some animals can make sounds (*phōne and psophos*) and birds are capable of supralaryngeal articulation (*dialektos*, 'speech'), none of them have language (*logos*)[2]. For Aristotle, the sounds of speech must meaningfully combined to become true language, and only humans possess this skill[3]. This definition centres on the compositional structure of human language and is reminiscent of modern linguists' notion of the duality of pattering. He also argues that compositionality is a reflection of the arbitrary association between linguistic signs and their meanings, which is itself a sign of human rationality. Language is also inherently moral, as the same rationality that underpins language also underpins humans' abilities to understand and converse about politics and ethics[2].

DESCARTES

The perceived correlation between language and rationality was carried to an extreme by Descartes, who argued that because animals lacked language, they not only lack rational thought but any thought at all. Because they do not use a semiotic communication system resembling human language, nor do they attempt to learn human language, Descartes concluded that non-human animals are incapable of rationality and are therefore automata with neither thoughts nor consciousness[4]. Similarly, in the 1980s, philosopher Donald Davidson argued that animals are incapable of thought because they cannot form beliefs, since the formation of beliefs requires language[1].

CHOMSKY

Like Aristotle, Chomsky and other generativist linguists also claim that animals are incapable of language based on what they see as the key structural features of language. In Chomsky's view, language is, by definition, the combination of smaller elements into bigger ones, through the duality of patterning and the capacity for infinite recursion. Chomsky has stated that animals 'obviously' communicate with each other, but their communication does not qualify as language[5].

In the 20th century, many experiments were carried out to test whether non-human animals can successfully learn and use human language. Early experiments teaching primates to use verbal communication were largely unsuccessful, leading to a shift towards using sign language. Studies with the gorilla Koko (1971-2018) showed that she understood over two thousand human words,

AGE

COMMUNICATION

learned over a thousand America Sign Language signs (modified for gorilla hands), and could use them to recount memories, express her emotional state, and even tell jokes and lies. However, such findings do not prove that all (or even many) animals are capable of human-like language: animals in these studies have to learn through explicit instruction, rather than acquire language implicitly as human infants do; results from primate species cannot be readily extrapolated to other animal species; and even when animals attain linguistic competence through instruction, to what extent are they using language as we do — by spontaneously combining different linguistic elements in ever-creative ways — versus merely giving stock responses they associate with particular stimuli[6]?

The views discussed above all present language as something unique to humans that non-human animals cannot attain. Chomsky goes so far as to ground these structural features of language in human biology, by proposing innate linguistic knowledge in the form of Universal Grammar and an innate Language Acquisition Device. Much of Chomsky's reasons for human linguistic innateness come from the supposed unlearnability of natural language (poverty of the stimulus), an assumption which generativist linguists do not relinquish even as further research has shown that statistical learning is more powerful than it was once believed[7]. Thus, it makes sense to view Chomsky's conviction that language is biologically unique to humans as expressing a strong but implicit belief in human exceptionalism.

Aristotle, Descartes, and Davidson all conclude that we can only think through the medium of language, and animals lack thought because they lack language. In the case of Aristotle and Descartes, animals' lack of language overtly confers an inferior moral status, since they see language as a manifestation of justice and rationality. Here, language is linked to the aspirational virtues espoused by the dominant class in their societies, i.e., adult males who hold economic and socio-political capital. The marginalisation of non-verbal creatures from moral consideration is mirrored in Greek and Roman portrayals of politically marginalised people: women, children, slaves, and foreigners were also labelled as voiceless because their linguistic practices deviated from the acceptable norm[2].

Philosophers of animal cognition like Davidson also find commonality with behaviourist critics of animal language studies: the animal mind is seen as an impenetrable black box, which does not undertake meaningful cognition apart from learning to associate stimuli with responses. The behaviourist view flourished in the 20th century in both human and animal psychology but fell out of favour in human psychology in the 1960s. The fact that behaviourism continued to hold sway in debates on animal cognition even decades later is testament to our willingness to hold the pre-theoretic belief that animal minds are so fundamentally different from ours that we cannot even attempt to understand them[8].

Most importantly, in all of these views, the communicative behaviour of non-human animals is measured against the standards of *human* language and *human* modes of thinking. Thinkers have become caught up in the structural features (compositionality) and aesthetic ideals (expression of rationality, justice, and philosophical commitments) of human language, that they do not consider what animal communication is or does on its own terms, and nor do they question whether this forms the best analysis of what language is. Animal language studies such as those with the gorilla Koko also exhibit similar anthropocentric underpinnings: instead of studying how non-human animals interact with their own species in a naturalistic environment, animals are assessed according to their ability to learn human language, because *obviously* human language is the only language worth learning and assessing, since humans are the only animals with language.

A redefinition of language that goes against established anthropocentric thinking can be found in Eva Meijer's 2019 book *When Animals Speak: Towards an Interspecies Democracy*[9]. Meijer argues that traditional structural definitions of language seek to delineate language as uniquely human behaviour by using an overly restrictive definition, even though human communication uses a wide variety of phatic expressions and non-verbal cues, which are not informative or grammatical but still form a key part of many linguistic actions[10]. Meijer defines language to be any form of communication that expresses an individual (human or non-human) animal's intelligence, rather than instinctive, mechanistic reactions[11]. She appeals to Wittgenstein's notions of language games and family resemblances: different types of linguistic interactions form different language games with their own rules and expected outcomes; these situations are all instances of *language* because they share a pool of overlapping language-related attributes. In this framework, animals in a naturalistic environment exhibit a wide range of communicative behaviour across verbal and non-verbal modalities, which can all be labelled as language despite having relatively little in common with each other or with human language[10].

Meijer draws on a variety of ethological research to illustrate the linguistic capacities of non-human animals, such as how the songs of humpback whales are formed compositionally, producing 'sentences' that contain up to 400 elements[12]; how thrips insects produce different chemical alarm calls for different threats by combining pheromones to different amounts[11]; and how lizards can express themselves through their posture, the number of legs they have on the ground, nodding their head, and displaying or inflating their chin[13]. Social behaviour such as group-building and cooperation have long been observed in mammals but have also recently been observed in earthworms: earthworms are capable of forming herds, and when pairs of earthworms are put into a maze together, they tend to maintain physical contact and navigate it together[14]. According to Meijer, all of these constitute conscious communicative behaviours from individuals, so are linguistic in nature, if distant from prototypical human language.

Meijer's ultimate claim is that the range and complexity of linguistic behaviour in non-human animals prove that we should treat them as individuals with agency and political presence, and, in Meijer's words, we should construct our political systems to include interspecies language games where both human and non-human agents can participate to safeguard animal rights[15]. Meijer argues that we have more political relations with animals than we admit: for example, the use of earthworms in agriculture, ecological management, and scientific research constitutes a political relationship, and earthworms' capacity for engaging in some linguistic behaviour means humans should try to understand their behaviours better and be sensitive to their preferences[16] (this conclusion has indeed struck readers and reviewers as unrealistic[17]). While previous thinkers have used language to differentiate humans from non-human animals, and to deny animals political or moral agency, Meijer uses language to unite humans and animals, and to empower animals in our anthropocentric ecosystem. Her definition of language based on situational communicative function helps to bridge the apparent differences between human and non-human communication, and also contributes towards a more decentralised view of human communication that puts more weight on multimodal processing.

So, after all this, we return to some fairly standard truisms: *it all depends on your definitions*, and *academic debates are never non-ideological*. In the case of whether animal communication can be characterised as language, it involves your beliefs about the moral and political status of animals, and about the nature of language. Ethological research on animal communication points towards sophisticated multimodal communication methods in many species. While human and animal systems of communication differ by how they work and what linguistic situations they are used in, they bear enough family resemblances to be part of the same socio-cognitive phenomenon that we call language.

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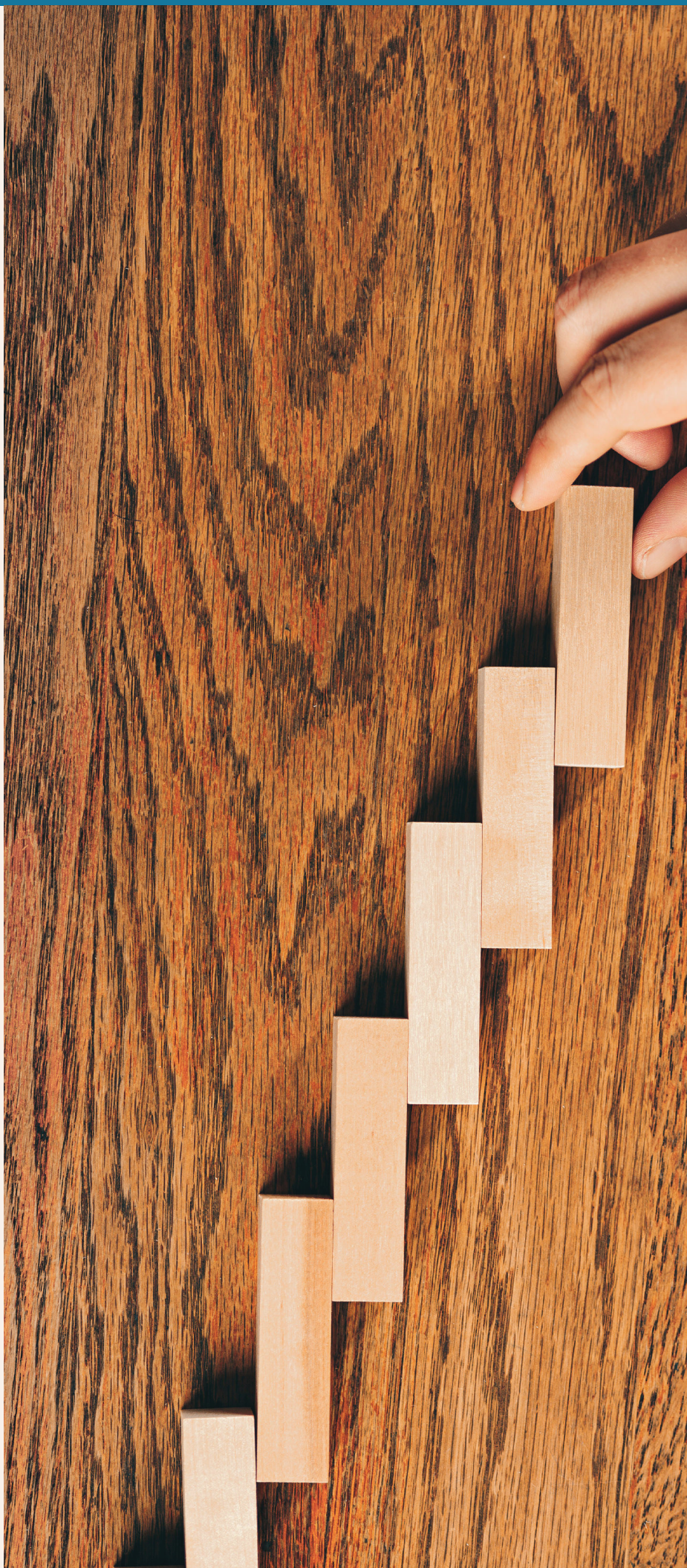
A HANDS-ON APPROACH

How to Write a Dissertation
When Everything (Including You) is Falling Apart

Recent graduate Cara McSherry reflects on maintaining productivity in her final year and beyond.

No matter what the past year and a half has brought for you, I'm sure we can all agree that things have been a wee bit weird. I know, I know — not another Covid article. But the thing is, the whole *last-year-of-uni-during-a-pandemic* situation actually forced me to spend time reflecting on productivity and different ways of working (and yes, that was one of the *many* trains of thought that helped veer my brain off its dissertation track…).

This was mostly because, for a long time, I struggled with making myself sit down to do quite literally *anything*. And that surprised me. Focus isn't something I had ever struggled with before: in pre-Covid years, I was busy balancing part-time restaurant work with my full-time commitment to pints and nights out, so I would squeeze any uni work into the spaces that fit around that — and it was always *fine*. Essays, tutorial prep, revision… all those things seemed to slot easily into the sporadic few hours of free time that I left myself with each week.

But when September 2020 rolled around, I suddenly found myself with this seemingly infinite amount of time looming over me — surely it would be easier than ever to bash out a few thousand words? And yet, in a cruel twist of fate, a blank schedule actually left me floundering at how to compress the massive task of a dissertation into tangible pockets of time.

I sat down at my desk. I opened the Word document. I rewrote the title for 3 weeks straight. And I panicked.

And then, because brains are sometimes not very cleverly designed, that panic made me completely unable to do anything that might actually help get me out of my flap. That went on for a long time.

I started to place blame everywhere else: our flat didn't have the right *feng shui* for productivity; if only I wasn't so cold — maybe I needed an electric blanket? Or a new desk chair? It took me a good few months, a new flat and a whole lot of 'ADHD in adult women' Google searches to realise that wallowing in those thoughts wasn't actually helping get words from brain to screen. Shocker.

I wish I could say that things turned a massive corner and I became Cara, Goddess of Productivity, but, if I'm being honest, I'm still waiting for that to happen. While I loved my dissertation topic and had the best support imaginable (both academically and not), I do feel like I limped past the finish line with all my final submissions back in April. That said, a couple of things did massively help me, and are habits that I have carried forward into my working life in the months since.

Firstly, and arguably most importantly, I bought a planner. This sounds basic and is probably on every *how-to-be-productive* guide ever made, but that's for good reason. My planner saved my degree — no exaggeration. There is nothing more soothing to a panicked brain than seeing all your tasks for the day compressed into a tiny wee list on a piece of paper. There is also nothing more satisfying than crossing things off when you're done — and yes, I do write all the mundane tasks like 'brush my teeth' for maximum satisfaction. You should too.

Secondly, if you end up without a fixed schedule, make yourself adhere to one anyway. I'm not actually great with time intervals as I get too fixated on how long I have left and — you guessed it — work myself into a panic about not doing enough work in the allotted time. But what I do find helpful is chunking up my day by tasks. It's good to be as specific as you can with this, like 'you can go make a coffee once you've read these three papers' or 'you're not allowed to watch *Love Island* until you've finished writing this paragraph' (that last one works especially well when *Casa Amor*'s happening).

Finally, it's so important to know when to stop. Sometimes when you're trying to write, words quite simply don't want to word. And that's ok — don't force it. I always think essay writing is like making cheese sauce: you can chuck milk in a pot and stir it all you like but it won't come together until it actually wants to. There's usually something less scary to do in the meantime: referencing, formatting, boiling pasta. Other times, those things can get overwhelming too — and when that happens, take a break. A real one, where you don't even let yourself think about thinking about doing work. I can't promise you'll come back having gained a magical ability to finish any task you set about doing, but I can promise that you'll feel a lot more like a whole human being again. And who knows, one day you might even find yourself writing a whole article telling other people how to be productive.
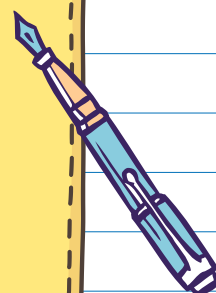
Puzzle Answers and Solutions

Nepaliglot Arithmetic

Sam Ahmed
First-year research masters student, University of Leiden.

Answers

Q1.	1D	2C	3A	4F	5B	6G	7E

Q2.		
	a)	sum hale sum
	b)	poŋa hale yat
	c)	nau hale yat
	d)	nis hale nis

Solutions

This question contains two different number systems in the two different languages. The Nepali system is base 10, however it shows great irregularity in its formation of numbers. In this question, we only encounter numbers up to 16, so this is not too apparent.

On the other hand, the Chepang system is base 12, but by contrast, is extremely regular. The Chepang system also borrows the numbers 6-11 from Nepali. Here is a comparison of the numbers 1-16 in the two languages:

	Nepali	Chepang
1	ek	yat
2	dui	nis
3	tin	sum
4	čaar	playa
5	paanč	poŋa
6	čʰa	čʰa
7	sat	sat
8	aatʰ	aatʰ
9	nau	nau
10	dasa	dasa
11	egʰaara	egʰaara
12	baarha	yat hale
13	terha	yat hale yat
14	čaudʰa	yat hale nis
15	pandʰra	yat hale sum
16	sorha	yat hale playa

For a number between 12 and 143 of the form $12\alpha + \beta$, the Chepang number is α hale β.
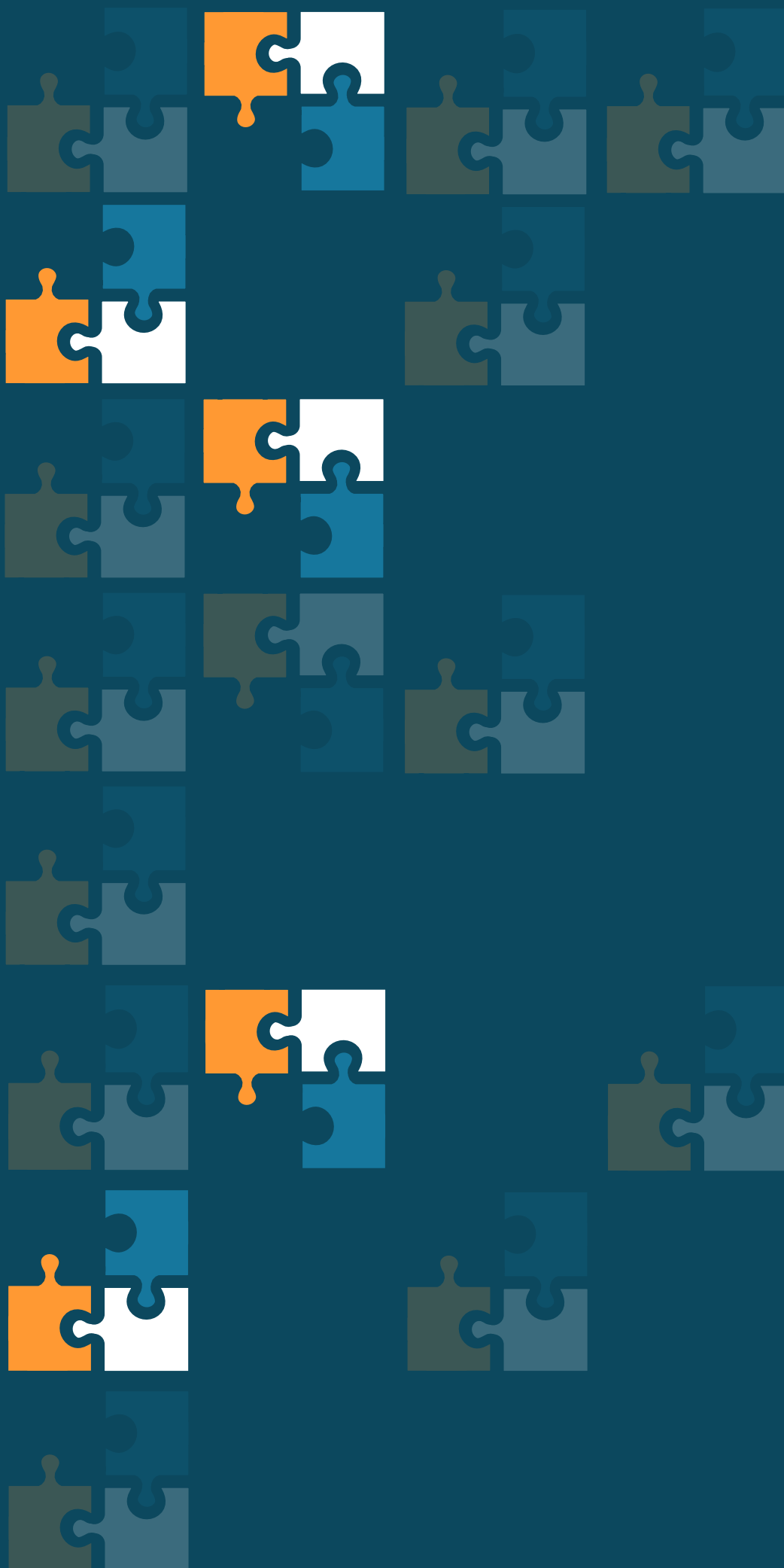
Words, Words, Words

Cloud Language

Literature columnist Olivia Szczerbakiewicz (University of Edinburgh) delves into the linguistic future of English and the ways possible dialects emerge with a study of David Mitchell's Cloud Atlas[1].

What makes a language the way it is? The versatility of English is a global phenomenon, yet within the scope of one language, a broad spectrum of variability stretches across time and space. Changing and evolving throughout the ages, English has bloomed into varying, coexisting branches which share characteristics and differences, remaining nonetheless recognisable as the same language at its core. In this column, I will explore processes of language change and dialect formation from an unexpected angle — a literary hypothesis of what could happen as English keeps changing.

David Mitchell's novel *Cloud Atlas* proposes such a theorised linguistic future for English. The narrative follows a five-stage structure, coursing through a reconstruction of Early Modern English, throughout the 20th century and contemporary speech, and finally meandering into two future varieties. The use of these hypothetical Englishes enriches the storytelling and world-building of the novel, while following a familiar set of parameters — thus bridging linguistics and literature together seamlessly. Let us examine each dialect in turn.

I. SONMI

The only constant of life is change. In dialect formation, two types of change are outlined: endogenous, stemming from changes within a linguistic system, and exogenous, highlighting the external impact on a linguistic system[2]. To illustrate this, let us take a look at the first speech community outlined by Mitchell: a highly-evolved, futuristic society strictly dependent on technology, where standardisation — pressure for exogenous change and reduction of regionally marked language features — is likely to be prevalent due to globalisation. The language strikes the reader as familiar but subtly changed, as shown in the following excerpt:

"In my xperience, fabricants have difficulties threading together an original sentence of five words. How could Yoona939 — or you, for that matter — acquire verbal dexterity in such a hermetic world, even with a rising IQ?"

"An ascending fabricant absorbs language, thirstily, in spite of amnesiads. During my ascension, I was often shocked to hear new words fly from my own mouth, gleaned from consumers, Seer Rhee, AdV, and Papa Song himself. A dinery is not a hermetic world: every prison has jailers and walls. Jailers are ducts and walls conduct."[1]

What is happening here? The reader's experience seems to mirror the character's described experience of language acquisition. First, we stumble upon lexical differences such as with the case of the word *xperience*, only to quickly discover that elision of the first vowel in the affix *ex-* is a common feature in similar words: *xactly*, *xpression*, *xtra*, *xecs*, *xpedience*. Previously existing words gain new meanings unknown to the reader: *fabricant* and *ascension* are coded to mean something different than we are accustomed to, for which our reality has no direct translation. Existing words change forms and uses — *to dorm* means to sleep. Morphology comes into play: derivational

neologisms emerge, such as *amnesiads* or the noun *pureblood*, derived from existing forms to address new referents. Parallel to this, we observe new inflectional lexemes, such as *unconscionable*, the meaning of which we can intuitively glean[2]. Brand names such as *Sony*, *Disney* and *Nike* become regular nouns referring to everyday objects: a *disney* is a movie, while a *sony* is the equivalent of a tablet. Consequently, changes stemming from phonetics emerge: we find the word *light* is spelled *lite*, and subsequently

recognise the same pattern with varieties of the cluster *-ight*, as in *flashlite*, *nite*, or even words like *slitely* or *friten* replacing *slightly* and *frighten*. Levelled, simultaneous change like this could likely be dictated by efficiency of speech processing and usage and is hence a plausible scenario to occur. But how much further can we take it, while remaining legible?

II. ZACHRY

Mitchell's response to the question seems to be: quite far! In the case of Sonmi's advanced future, we dealt more with chronological exogenous change prompted with the potential advancement of a Western world, the referents of which we can already parse and recognise with our linguistic background. In the second futuristic case study, the author proposes something more complex: a post-apocalyptic, post-capitalistic dialect formed within a small speech community, which has evolved with prevalence of endogenous change[2] — and hence developed very subjective, community-specific characteristics.

The introduction of this fictional future comes to the reader as quite a shock:

> "Old Georgie's path an' mine crossed more times'n I'm comfy mem'ryin', an' after I'm died, no sayin' what that fangy devil won't try an' do to me... so gimme some mutton an' I'll tell you 'bout our first meetin'. A fat joocesome slice, nay, none o' your burnt wafery off'rin's... "[1]

Indeed, for the first few pages, we might struggle to parse the text — that is, until the sneaky miracle of cognitive entrenchment[4] occurs and we find ourselves suddenly able to follow the narration quite seamlessly. How is this possible?

First and foremost, Mitchell's future English follows the same types of change which might occur in a real language. Firstly, we can observe an already existing linguistic variable: all of the *-ing* [ɪŋ] forms present in the text have shifted uniformly into *-in'* — *touchin'*, *leakin'*, *birthin'*. Levelling of exceptions occurs, doing away with irregular forms of inflection: forms like *told* or *thought* have been replaced with more logically consistent *think-ed* and *tell-ed*. Consequently, we can pinpoint phonology dictating change as well: apostrophes following a consonant signal the elision of unstressed vowels in words like *b'fore*, *hes'tate*,

mem'ry. A similar pattern occurs with *s'plain* and *b'liefed*, where we can also observe the simplification of the same *ex-* affix as in Sonmi's world to *s-*, as well as the reduction of the [f]/[v] variability between the noun and verb form of *believe*. Even the familiar word *coconut* changes into *cokeynut*, suggesting speech influencing the transcription.

Here as well we can observe word formation: the inflectional suffix *-some* can be identified as prevalent in the creation of adjectives: *loonsome*, *politesome*, *diresome*. Conjunction has evolved as well, allowing for clustering of words: *coolsome'n'mean*. As we identify and assimilate these separate changes, we can then easily decode full meaning of sentences, as in the case of:

> a) I creeped slywise'n'speedy.
> b) Meronym first rided northly Valleywards.

Finally, we encounter neologisms like *hideynick* (something along the lines of a *hiding place*) and *cocklydoo* (a bird we can construe to be a rooster). These, too, seem to be dictated by very region-specific factors such as utility or onomatopoeic transcription of noises surrounding the speaker, and thus are unique to the fictional speech community.

In order to come up with a plausible — and understandable — fictional language or linguistic variant, it seems we still have to follow rules applicable to real-world ones. Similarly, however, the ability to recognise and understand the parameters ruling the languages we know gives us the power to comprehend, analyse and even create new languages — even fictional ones.

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Curiouser and Curiouser

Linguists Online

Advice columnist Caitlin Wilson (University of Edinburgh) examines how linguistic study has been affected by a year online, and how we can keep adapting to studying Linguistics online.

The pandemic has brought many challenges over the past year. As students and scholars, our day-to-day lives have changed drastically. Long ago seem the days of crowded lecture theatres and packed labs. We have had to adapt our ways of learning and studying to adjust to a socially distanced, work-from-home lifestyle. As we enter a new academic year, we begin to slowly feel optimistic about the future. In-person classes and IRL meetings seem more and more possible. However, the pandemic is still not over, and we must be ready to carry on as we have been and prepare for possibly many more months of distance learning.

In this issue, I'd like to reflect on how linguists across the U.K. have had to adapt their learning and research methods as well as discuss how this year has affected them to help us all prepare for another year of the 'new normal'.
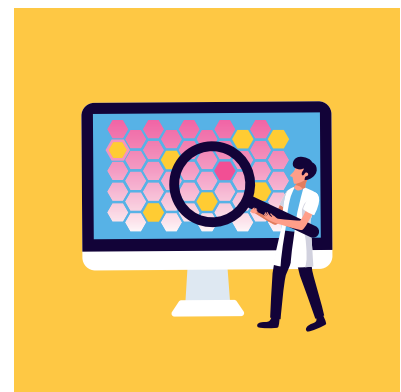
STUDY

The most immediate difference that students of any discipline have felt over the past year has been the move from in-person to online classes. Lectures, tutorials, and seminars alike have been held online in every university across the country to respect social distancing guidelines. Most universities offered a mix of both simultaneous (live) classes as well as pre-recorded ones.

What have we gained?

The clear advantage of recorded classes is that students can pause and rewind lectures to ease notetaking and comprehension. This has proved to be of exceptional value, notably to disabled students, with captions and alt-text

becoming the norm. Online study also removed physical barriers that, in the past, may have prevented disabled students or those living abroad from attending events.

What have we missed?

Overall, however most students that I have spoken to do not feel that these advantages can compare to the quality of learning gained from in-person classes. Indeed, there is little occasion to truly interact with professors and peers in an organic manner when we are confined to a Teams or Zoom meeting. As much as we have learned to accept this new reality, the truth is that nothing quite compares to real-life discussions.
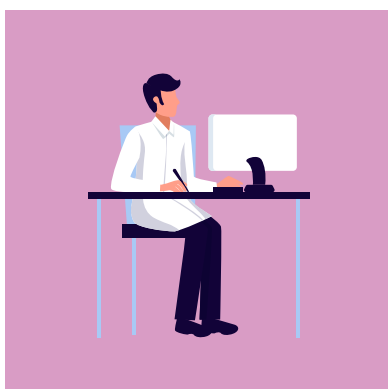
My advice

So, what can be gleaned from this? Despite certain universities promising IRL classes this coming semester, the reality of a post-pandemic world suggests that we will still have to make do with many more virtual classrooms and meetings. The best advice I can give is to make the most of what is offered. The advantages of pre-recorded lectures are evident, and we should continue using them to our benefit. I would then encourage all students to speak up and reach out when they feel they need the help. Lecturers and university staff are there to help and we shouldn't be afraid to seek support where needed.
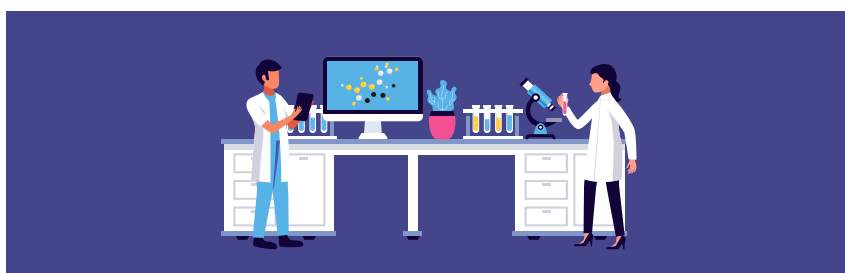
RESEARCH

Another aspect of scholarly life that has drastically changed for many is research. Much linguistic research revolves around human interaction and in-person experiments. The pandemic has thus forced many to change their methods of research and data collection.

What have we gained?

Online surveys have become ubiquitous over the past year. Platforms such as Qualtrics and Pavlovia were among those favoured by students collecting data for dissertations and research projects, allowing them to reach a large range of participants without the time and location constraints faced by in-person data collection.

For some, like myself, who study distant languages, the accessibility of technology and being able to study from our homelands have been invaluable. As much as we'd love to travel abroad and meet our subjects in person, the advantages of video calls far outweigh the financial and environmental burden of international travel.

What have we lost?

There are, however, many disadvantages to online experiments that linguists have had to make do with. For example, it is near-impossible to expect the focus that a laboratory environment provides when participants are in their own homes.

Furthermore, certain researchers need to be with their subjects and there are quite simply certain forms of data that cannot be collected virtually. These linguists have had to rethink their methods of research, for instance by asking participants to self-report. Unfortunately, in some cases, research has simply been put on pause until it is safe to return to tried and trusted in-person methods.

My thoughts

Academic life is about problem solving and the pandemic may be the biggest problem we have to solve. I applaud those linguists who have had to overcome many hurdles to continue their research and impatiently wait the return of a post-pandemic life with them. Let us keep making the most of technology to connect with our peers all over the world. Together, we can solve these problems and find ways to carry on our exploration of language.

As for you, dear reader, I wish you the very best as you prepare for potentially another year online. Keep in mind how connected we all are when the goings get tough and make the most of every second surrounded by friends and colleagues offline.

Anatomy of a Linguist

What Keeps Us Up at Night

Is Human Language Unique?

T. R. Williamson, Columnist for Anatomy of a Linguist, examines Hockett's design-features of language for comparison with animal languages, looks at bee waggling, and argues for a benefit of analysing similarities between us and our fellow cohabitants of Earth.

Lots of people have pets. More have at least interacted with animals at some point. They are ubiquitous in our lives in many ways — as livestock, as companions, and as cohabitants of the Earth. Children grow up memorising species' names, enthralled by the abundant ecological variety offered by the world into which they've been born. Darwin spent years comparing their similarities and revolutionised the scientific study of biology with his On the Origins of Species[1]. From this came the very notion of evolution, and with it the concept of a 'comparative' approach to studying naturalistic phenomena.

Over a hundred years ago, debates raged amongst members of the Linguistic Society of Paris about whether to admit speculative research into the origins of language[2]. No doubt inspired by the influence of Darwin and the progress of historical linguistics during the Victorian era[3], many rushed at the chance to make proposals about what we might call Proto-Indo-European. In their attempts, scholars often employed the comparative method; using historical sources of various languages to cross-reference lexical or grammatical similarities and track common ancestors through language families.
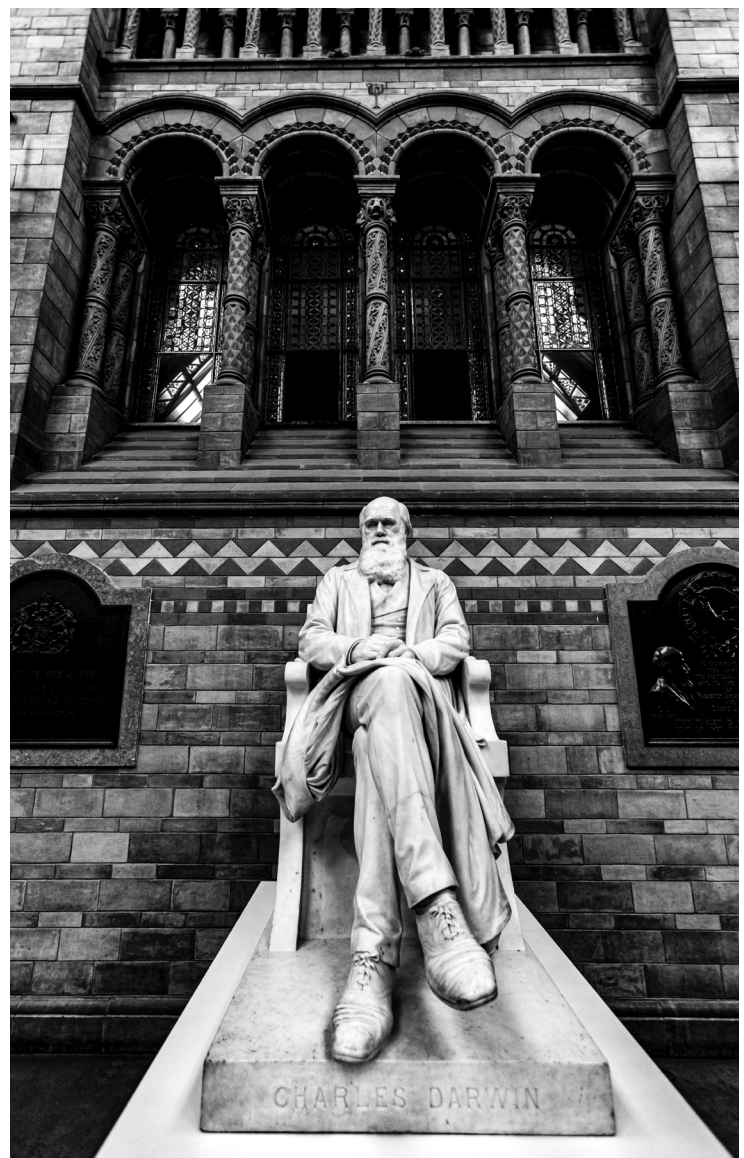
These approaches certainly offer utility in helping to understand the evolution of languages. But what about language itself, as a singular concept? We could trace linguistic patterns through ancient languages until the evidence runs out, but we would get no closer to knowing the properties of language as something that can experience evolution — that is, as a biological entity.

Such issues were ones with which Charles F. Hockett was preoccupied[2]. In 1960, he set about using a similar, comparative method on the fundamental, physical properties of language. And his objects of comparison? Human languages and forms of animal communication. What makes our languages different from those of all other species on Earth?

Hockett's analysis first consisted of isolating thirteen different characteristics, which he called design-features (DFs), of human language. Essentially, they're meant as necessary, but not sufficient, properties. Here is a brief run-through of them all.

1. Vocal-Auditory Channel:
linguistic communication occurs, physically, via vocal outputs and auditory inputs.

2. Rapid Fading:
a vocal output does not linger around indefinitely for a hearer to pick it up whenever they might wish.

3. Broadcast Transmission and Directional Reception:
a vocal output can be heard by anyone within a radius sufficient to pick it up and its source can often be found by locating a direction from which it came.

4. Interchangeability:
an auditory input can be quite easily reproduced by a human as a vocal signal of exactly the same kind.

5. Total Feedback:
you are able to have complete knowledge of, and can fully analyse, any vocal signal that you produce (because you can hear it too).

6. Specialisation:
linguistic signals are specialised to be solely communicative; they don't intend to serve any other biological, adaptive, purpose.

7. Semanticity:
there is a specific, intended, signal-to-object link between human language and the things we talk about, rather than any link being accidental or coincidental.

8. Arbitrariness:
there is nothing about the signals of human language that indicate the nature of the objects to which they're linked. For example, the word 'tree' doesn't sound like a tree in any way.

9. Discreteness:
there are discrete units with which linguistic signals are built up, like phonemes, morphemes, etc.

10. Displacement:
humans can use language to refer to things not present in the immediate vicinity, either in time or space.

11. Productivity:
there is an infinite number of possible expressions in human language.

12. Traditional Transmission:
knowledge of the specific symbols of a specific language is not innate, and thus neither is the capacity to produce specific linguistic outputs, but, instead, it is taught.

13. Duality of Patterning:
the discrete units of linguistic signals can be recombined to make new words that are totally unrelated. For example, 'tack' and 'cat' are phonetically the reverse of one another.

At face value, this list can come across in a few ways. From one perspective, it certainly appears quite thorough. Hockett arguably does well in his portrayal of language as a system that relies on physical, phonetic phenomena. From another perspective, though, the DFs seem a bit eclectic. One could be forgiven for suggesting that they almost represent a Frankenstein of properties that don't yield a sufficiently holistic picture of language when taken all together.

Signed languages, for instance, present a counterexample. According to the DFs, the world's many languages and dialects communicated using what we might call a 'manual-visual channel' (cf. DF 1) are overlooked as important in contributing to understanding the physical properties of language – a sentiment reflected in the phonetically-inclined wording of many other DFs.

Another oversight might be the absence of linguistic features related to social or cultural phenomena. While we must be careful not to criticise Hockett's list for something it does not try to be, we cannot forget that language does not exist in a vacuum. A defining feature of human language that distinguishes it from animals is that it is shaped by the (physical) contact of humans – languages whose speakers come into contact borrow sounds and words and concepts such that the languages themselves become more similar.

Yet, in many ways, the DFs *can* receive commendation for their capacity to distinguish human and animal communicative systems. One example Hockett uses to illustrate their effectiveness in doing so is bee dancing.

According to Hockett, there are several DFs found in both human languages and the dancing of bees. Also called waggling, this is when a bee, coming home after finding a new source of food, waggles to indicate its distance and direction from the hive[4], and even wind speed on the journey[5], to other bees. The audience bees can decode the waggle and then go out to find the new source of food.

In this way, their waggling is transmitted as a broadcast, albeit visually, and received from a specific direction (DF 2). It can be reproduced by other bees to indicate other sources of food (DF 4), which is clearly a form of communication with an intended meaning (DF 7). Because the sources of food are never in the hive itself, they are displaced (DF 10) and because there could be infinite sources, waggling appears to be productive (DF 11).
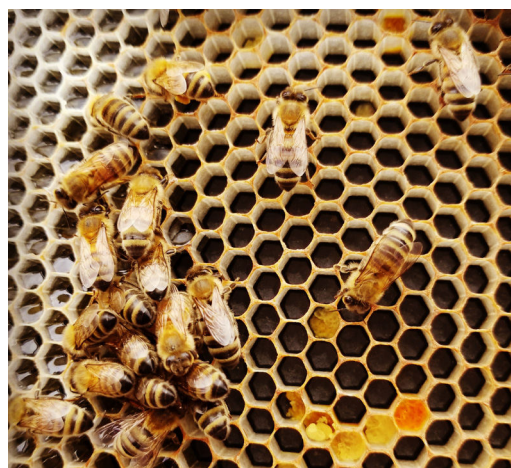
The work of Hockett has not gone without criticism in the half-century period that followed its publication in Scientific American, though he did try to update the original list six years later[6].

Some have suggested that the notion of arbitrariness is misguided because linguistic patterns such as the kiki-bouba paradigm suggest a certain semantic 'spikiness' or 'roundness' to sounds[7], and also because humans seem to prefer nonarbitrary linguistic symbols in psycholinguistic processing[8]. Others have argued that traditional transmission cannot incapsulate the build-up of (e.g., cultural) knowledge that comes with the teaching of linguistic information over generations[9].

Upon reflection, it seems to me that there are two traps inherent to works like Hockett's. The first trap is to even undertake such a research project. Imposing strict, closed, categorical distinctions on a phenomenon so poorly understood (at least, at the time of Hockett's writing) as language is bound to fail. It's almost hubristic to assume sufficient knowledge of language to be able to make such claims, and you will never please everyone.

The second trap is to analyse Hockett's work as something more than it was intended by accident. Because it seems so broad in scope, it also appears very easy to poke holes in. It's easy to lose sight of the fact that Hockett's aim was not to provide normative criteria for defining 'what a language is'. Indeed, to assume as much is to strawman the DFs — they do not fail by omitting x or y or z if they were never meant to.

What makes these design-features so fascinating is their ability to connect us with animals, on almost a social level, in a logically plausible way. For all its faults, this zoologically-inspired effort to unite our language and bees' waggles is admirable and inspiring. There is widespread us-and-them-ing about animals amongst humans, and it can often be valid. When our similarities are exaggerated, however, the humbling we humans receive is a sight to behold.

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○ Que

Question 1
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GRADUATE ESSAY COMPETITION 2021

 write us an essay in response to one of the three questions below. Essays should be 2500 words long (+/- 10%), of your choice. For each of the questions, we have provided a list of recommended reading to help you get started rces online, please contact us (via social media or email) and we will help as best as we can. These references are, elcome to bring in other sources!

tablished internally to ULAB, but the best submissions will take a novel approach to a question, will think creatively d, most importantly, will be exciting to read! We look forward to reading your entries – good luck!

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y addressing any of the following is-

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aticality can be dialect-specific, why t be idiolect-specific, and does this concept itself redundant? ased language use and contact trend ll sentences being grammatical?

Question 2:
Linguistic Universals

Languages differ in many ways, in- cluding in their word order, sound inventories, lexicons and morpholo- gical processes. However, languages are similar in many ways too, and a number of linguistic universals exist. Linguistic universals can be absolu- te (all languages sharing a property or pattern of properties) or statisti- cal (the vast majority of languages sharing a property or pattern of pro- perties).

Making sure to address both abso- lute and statistical universals, write an essay exploring the possible rea- sons that linguistic universals arise.

Question 3:
Critical Discourse Analysis in Society

Critical discourse analysis (CDA) is a multidisciplinary me- thodology that allows researchers to explore and uncover ideologies and examine how they affect language use. They do this by denaturalising ideologies that are often hidden and assumed to be 'common sense'. As Gomez-Jimenez (2018, p.101) explains, 'CDA addresses social problems and so it can clarify our understanding of forms of social in- equality'.

Discuss the value of critical discourse analysis in the con- text of one of the following topics (or an intersection of multiple):
· Environment (ecolinguistics)
· Gender & sexuality (feminist & queer linguistics)
· Disability
· Race, ethnicity & nationality
· Religion
· Social class

ded reading for each question available on our website: https://www.ulab.org.uk/essay-competition

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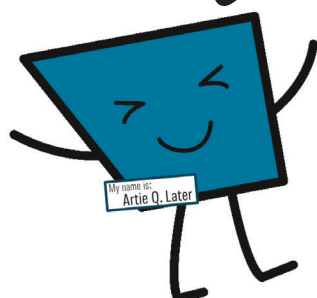Kitty Liu
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