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Developing a Resource Model of Power and Authority in Anonymous Online Criminal Interactions

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Abstract
The purpose of this paper is to provide both a theoretical foundation and a practical framework for analysing power and authority in online interactions. This is to assist forensic linguists and law enforcement in their understanding of anonymous online criminal networks, and the roles of individuals in these online communities. The lack of contextual knowledge present in anonymous online fora creates a challenge for the analyst in finding a framework to theorise, explore, and describe different types of power performance and thus the different roles of interactants in these fora. In this paper, we provide a framework to describe the basis on which individuals make claims to power and use this framework to explore the nature and distribution of power across different fora of both criminal and benign intent. This is developed through an analysis of three online discussion fora, of approximately 160,000 words, resulting in a framework of nine main categories of power resource. This allows us to contrast the three fora, showing differences in the nature and distribution of power resource, and also enables description of individuals as high-resource or low-resource with regards to their claims to power. This theory and framework can also be productive in the analysis of language and power in computer mediated communication (CMC) more widely.
Keywords: *Language and power, Pragmatics, Forensic linguistics, Language and identity, Computer mediated communication (CMC).*

Resumo
O objetivo deste artigo é fornecer uma base teórica e um quadro prático para a análise do poder e da autoridade presentes em interações online. Pretendemos ajudar os linguistas forenses e as autoridades a compreenderem as redes criminosas anónimas e os papéis dos indivíduos neste tipo de comunidades online. A falta de conhecimento sobre o contexto, que se verifica nos fóruns anónimos online, cria um desafio para o analista, que tem de encontrar um quadro para sistematizar, explorar e descrever os diferentes tipos de manifestação de poder e, consequentemente, os diferentes papéis dos interlocutores nesses fóruns.

Neste artigo, apresentamos um quadro para descrever a base sobre a qual os indivíduos reivindicam poder e utilizamos esse mesmo quadro para explorar a natureza e a distribuição de poder em diferentes fóruns, tanto com intenções criminosas "malignas" como "benignas". Este processo foi desenvolvido através de uma análise de três fóruns de discussão online, com aproximadamente 160000 palavras, resultando num quadro de nove categorias principais de recursos de poder. Isto permite-nos comparar os três fóruns, mostrando diferenças na natureza e distribuição dos recursos de poder, permitindo ainda descrever os indivíduos como tendo recursos elevados ou baixos no que diz respeito às suas reivindicações de poder. Esta teoria e quadro podem também ser produtivos na análise da linguagem e do poder na comunicação mediada por computador (CMC) de forma mais alargada.
Palavras-chave: *Linguagem e poder, Pragmática, Linguística Forense, Linguagem e identidade, Comunicação mediada por computador (CMC).*

1. Introduction

One important and growing problem for law enforcement is the need for better understanding of criminal online spaces, including the highly-anonymous spaces of the dark web. One area where linguistic analysis might assist is understanding how powerful or influential individuals behave and interact within online communities. The aim of this paper is to provide both a theoretical foundation and a practical framework for analysing power and authority in online interactions, for application in forensic linguistics analysis. Specifically, our objective is to develop a framework that can be applied to the analysis of anonymous interactions of criminal online fora. However, this theory and framework can also be productive in the analysis of language and power in other domains of computer mediated communication (CMC).

We explore this by considering three online fora. The first is a non-criminal, parenting forum, which frequently discusses sensitive topics, but is freely-accessible on the internet. There is no specific provision for individuals to contribute anonymously, over and above the felt anonymity of any online social interaction. The second forum is a white nationalist discussion forum, also freely-accessible on the internet. As discussions on the site often focus on socially unacceptable topics, and can also include the discussion of criminal activities, this creates a somewhat different focus for concerns around anonymity. The final forum is a Child Sexual Exploitation and Abuse (CSEA) forum that is hosted on the 'dark web' - that portion of the internet that is heavily encrypted and requires specialist knowledge and software to access. Participants in this forum make considerable efforts to ensure their anonymity and there are discussions on the forum as to how this can be best achieved. By considering these three fora, with their similarities and differences, we hope that the theory and framework of power that we are developing will generalise to the analysis of other online contexts.

2. Theories of Language and Power

The study of language and power stretches across many social science disciplines and has a long history including in the fields of psychology (Conley, O'Barr, & Lind, 1978), sociology (Bordieu, 1991), and linguistics (Fairclough, 1984), etc. It is, however, virtually impossible to come to a universal consensus to define exactly what power is, and this is reflected in the literature with many studies approaching the notion of power from very different perspectives. Some studies, for example, have chosen to examine how clear institutional power differences can be mapped on a linguistic level, for example, in doctor-patient interactions (Ainsworth-Vaughn, 1998), in workplace communication (Kacewicz, Pennebaker, Davis, Jeon, & Graesser, 2014), and in police interviews (Haworth, 2010). Other studies have instead focused on the relationship between language and traditional social power categories such as class (e.g. Conley et al., 1978), gender (e.g., Lakoff, 1973), and age (e.g., Blum-Kulka, 1990). This literature often sees power as a binary distinction, with one individual being more powerful in an interaction than another either because of their institutional position or because of their demographic characteristics.

These diverse literatures show that power is a notoriously slippery concept to define across linguistics and the social sciences. However, for the purposes of this paper we are interested in the basis on which individuals make claims to authority in interactions, including making claims to be heard by other participants. This situates our working definition of power as being interactional, rather than as a performance of institutional or social power. Further to this, our model of power proposes that power it is not a binary or monolithic concept, rather that in any interaction it is a resource that can be drawn upon by some individuals and not by others and that this access to power varies according to context. Thus, in the anonymous online spaces that we are most interested in, power may operate very differently, and be characterised differently from offline contexts or from contexts where individuals, or their institutional roles and power bases are well known.

The analysis of power has been the focus of much research in the field of pragmatics (including Bousfield & Locher, 2008; Brown & Levinson, 1978, 1987; Leech, 1983; Locher, 2004; Watts, 2003). In their seminal work on politeness theory, Brown and Levinson define power as an "asymmetric social dimension of relative power" and "the degree to which H [the hearer] can impose his own plans and self-evaluation (face) at the expense of it S's [the speaker's] plans and self-evaluation." (Brown & Levinson, 1987, 77 quoted in Culpeper, 2008, 33). Brown and Levinson's power variable has, however, been subject to some criticism. For example, Culpeper has highlighted that Brown and Levinson "say little about the type of power that might be involved in interaction" (of which there are many different types) and their study does not account for "the complexity of how power works in interaction" (Culpeper, 2008, 34). Subsequent research in pragmatics has sought to address this research gap (e.g. Locher, 2004; Watts, 2003) and the present paper seeks to contribute to this work through an investigation of the nature and linguistic performance of power in anonymous online discourse.

As such, this paper sits within the domain of interpersonal pragmatics, which explores the 'ways social actors use language to shape and form relationships in situ' (Locher & Graham, 2010, 1). In this paper, we focus exclusively on the claims to power made by interactants in their answers to requests for advice posed by Original Posters

(OP) in three online discussion fora. By making claims to power, the interactants attempt to persuade the Original Poster (and other interactants present in the fora) to listen to their point of view and potentially to act in a particular fashion. Whilst these interactional moves seek to influence the actions of the Original Poster, this is often achieved without engaging in directly face-threatening assertions.

Online discussion fora provide an interactional context where differences in institutional or social power are often obscure or indeterminate, and posters may be partially or fully anonymous. This lack of knowledge of the institutional and social power structures in these contexts can create a challenge for the analyst in finding a framework to theorise, explore, and describe these sorts of power performance. However, in these contexts, it is clear that interactants still shape and form relationships by drawing on linguistic resources that enable them to perform more or less powerfully in those interactions. One aspect of relational work that becomes particularly apparent in these performances of power is the interactants' implicit or explicit efforts to establish their legitimacy to contribute to and be heard in the interaction. The aim of this paper is to develop a set of analytical techniques that may be productive in helping to categorise individuals in positions of power in online interactions. We do this by providing a framework to describe the basis on which individuals rest their claims to be listened to. Further to this, we use this framework to explore the nature and distribution of power across different online fora of both criminal and benign intent. This is demonstrated through an analysis of three different fora, as outlined above.

3. Data

To address the aims of this paper we collected three datasets. To address ethical issues of researcher wellbeing (BAAL, 2021), we first developed and tested frameworks for analysis on a benign clear web parenting discussion forum (Forum 1). By clear web, we refer to publicly-accessible internet sites, indexed by common search engines. We then moved on to analyse two forensically interesting and potentially distressing datasets. The second dataset was a clear web, white nationalist discussion forum (Forum 2), which included talk of potentially illegal activities and extreme ideologies. As such, it is blocked by some internet providers and in some jurisdictions. The third data set was a dark web CSEA discussion forum (Forum 3) in which apparent offenders discuss their offending activities and arrange to exchange abuse images and media.

This approach enabled us to spend less time with the disturbing data, whilst ensuring the generalisability and transferability of our results to these contexts. It also allows us to contrast communities with criminal and non-criminal intent, in the clear web and dark web (with different expectations around anonymity and security), and with communities with different topics of discussions and reasons for interacting.

3.1. Forum 1

Forum 1 is a well-established discussion forum, which focuses on a range of parenting and lifestyle topics. As such it has no criminal purpose and no specific ideological purpose. It contains a 'Talk' section, freely accessible to visitors without a profile but one is required to post on the site. To register, users must supply an email address and select a username but otherwise their profiles are anonymous. In this sense it is a clear web forum, but with some generic sense of anonymity for the posters. All sub-fora and threads

are open both to registered users and 'lurkers'. Lurkers are those who visit the fora, but do not themselves post. It does have a collection of paid moderators who through their usernames are identifiable as moderators. Moderators occasionally post on threads, for example referring a user to formal sources of support and deleting unsuitable posts, but overall, they do not appear to have a particularly dominating presence on the site.

3.2. Forum 2

Forum 2 focuses on propagating white nationalist, racist ideologies. These ideologies are often disapproved in broader society, and activity on the site can include discussions of criminal activities. As with Forum 1, this site is a clear web forum and users can access some areas of the site without a registered profile. If they want to post on the site, they need to register with an email address. Unlike Forum 1, Forum 2 features specific sections reserved for higher level users. These users are often moderators (who are unpaid) or individuals who have made financial donations to the site.

3.3. Forum 3

The third dataset is a CSEA forum found on the dark web. It features extreme illegal activity, and as a result its users go to significant technological efforts (via advanced encryption software) to avoid detection. Users with sufficient technical expertise can view or 'lurk' on some discussion boards in the forum, but the forum requires users to have a registered username if they want to post on the discussion board. Given the high-risk nature of the site users are constantly vigilant of being infiltrated by law enforcement and take great efforts to ensure their anonymity and protection. Hierarchies of power and exclusivity are present in the forum. For example, to gain access to more exclusive and higher-level discussion boards users may be required to provide novel or extreme child abuse media. Possession and ability to distribute such material is therefore an extralinguistic marker of power in this forum. Moderators act as gatekeepers to these areas and unlike Forum 1 and Forum 2 will also advise users and delete posts if their contributions may potentially leak unnecessary information about themselves and their activities or contribute to a breach in anonymity.

4. Developing a resource model of authority and power in interaction

4.1. Sampling Strategy

From prior data collection, we had access to multi-million word corpora for each of the three fora. As this project initially focused on the markup of pragmatic features, it was necessary to sample a subset of each forum for qualitative analysis and manual coding. Sampling criteria were developed which could be applied across the three datasets. We identified a series of eight prompting phrases present in titles or opening posts of threads from across the three datasets. Preliminary corpus analysis revealed that prompts such as 'how do you', 'do you know', 'why did', 'what are the', and 'how do I' elicit responses from users which contain claims of power. Users make claim to different sources of power to present themselves as being sufficiently authoritative in a given discussion and to give them the legitimacy to offer advice to a poster and/or contribute their perspective to a thread and thus to make a claim to be listened to in the given interaction.

To further investigate these performances of power from the identified threads, we selected a smaller dataset of 160 threads by taking the 20 most recent threads of each prompt, with each thread being initiated by a different author. As some threads were 1000s of posts long and because we coded the threads manually, it was necessary to reduce the data further. In the absence of any protocol established by the literature, we did this by taking the first 3 threads for each prompt which fulfilled the following criteria:

- threads which were 5 to 9 posts in length;
- threads which were 10 to 19 posts in length;
- threads which were 30 to 49 posts in length.

This final dataset was used to identify the different ways in which claims to power were performed across the three fora. This amounted to a corpus of approximately 160,000 words (72 threads in total) which was explored and manually coded, with roughly equal representation across the three fora. The process led to the identification of a set of power resources which are exemplified and discussed in detail below, and allows for analysis of both individual power performances and the analysis of how power is performed differentially across the three speech communities.

4.2. The resource model of authority and power in interaction

Our model of power in online interactions includes nine main categories of power and authority, some of which include two or three subcategories. These power types are described below and are exemplified from the three datasets (where such examples exist). As the power resources arise from the data we include resources that occur in at least one forum but we make no claim that they make an exhaustive list. From our exploration of the broader corpora we believe that all of these power categories are likely to occur across the three datasets even if not observed in the 72 threads analysed in the data subsample. Whilst we also believe that the resources will be found in online fora beyond the three studied in this paper, we have no expectation that they will be present across all internet discussion fora. We also expect that different fora would demonstrate different distributions of power resource. This is explored below in the community level comparison.

In the examples below we provide explanations of community specific terms or initialisms in square brackets.

4.2.1. *Community Expertise*

By making a claim of community expertise, users demonstrate experience of the norms of this speech community or the community as a whole. For example, this can include referral to different threads and acceptable/unacceptable practices on the site, as well as the general views and activities of the online community. Users may make a claim of **direct community expertise** through their own experience of a forum, or they may make claim of **indirect community expertise** through reference to the experience of someone they know.

Examples of direct community expertise:

- **Forum 1**: if you need advice it would be better to start a new thread (there is a start new thread link under the adoption topics banner) then people will be able to post specifically to you.

- **Forum 2**: When you go to post a picture on [Forum 2]. You have to right click and copy the image url. Then on your post up at the top is a series of small boxes. One of them has a mountain on it. You then click it. Then you paste the image url into the given spot and click on. That will post your picture.
- **Forum 3**: I've posted a lot elsewhere in the forum on why I believe pedophilia is normal ...

Examples of indirect community expertise:

No examples of indirect community expertise were found in the current data samples analysed in this stage of the project.

4.2.1.1. Community specific initialism One form of community expertise can be seen through the use of acronyms or initialisms specific to the online forum or community.

Examples of community specific initialisms:

- **Forum 1**: I informed SS [social services] as SW [social worker] said that their legal term would take weeks to update them.
- **Forum 2**: I've known people who were not WN [white nationalist] / NS [national socialists] but had issues with black crime, drug dealers and other issues.
- **Forum 3**: Fiendishly clever and elusive guys who make, share and collect terabytes of CP [child pornography] ...

4.2.2. *Technological expertise*

By making a claim of technological expertise, users draw on their experience or competence in a particular technical area. This is of particular relevance to the dark web forum where expertise in encryption and digital technologies is valued, but the power type can also occur more broadly to include other areas of technology. Users may make a claim of **direct technological expertise** through their own expertise of using a given technology, or they may make claim of **indirect technological expertise** through reference to the technological expertise of someone they know.

Examples of direct technological expertise:

- **Forum 1**: No examples of this power type were found in Forum 1 data sample analysed for this stage of the project.
- **Forum 2**: I saw pictures of Lake Mead and the water behind the dam almost reached the bottom. The inflow pipes were too high for the water to go in. I think engineers were going to devise additional intakes lower on the towers.
- **Forum 3**: Thankfully I've found TOR ['The Onion Router' - software which enables anonymous communication online] and truecrypt [encryption software]

Examples of indirect technological expertise:

No examples of indirect technological expertise were found in the any of the data samples from Forum 1, 2, or 3 analysed in this phase of the project.

4.2.3. *Veteran power*

By making a claim to veteran power, a user shows long-term membership of a forum and/or of the wider community or subject area. Users may make a claim of **direct veteran power** through their own experience of a fora or topic, or they may make

claim of **indirect veteran power** through reference to the experience of someone they know. In our coding scheme we have no specific criteria of the time frame in which users can make a claim of veteran power. Instead, we simply record when users make claim to this kind of experience.

Examples of direct veteran power:

- **Forum 1**: We have looked after quite a few [...] children over our 33 years of fostering ...
- **Forum 2**: That is really an excellent quote from [white nationalist figure], because it is so true. I have been around here at [forum name] for some time, but I don't recall hearing or reading that before.
- **Forum 3**: These chats have been around for many many years with a lot of long term members who helped sites like this one exist.

Examples of indirect veteran power:

No examples of indirect veteran power were found in the data samples from Forum 1, 2, or 3 analysed in this phase of the project.

4.2.4. *Accredited expertise*

By making a claim to accredited expertise, a user demonstrates or claims that they have official or formally recognised expertise on a given topic, e.g. 'I am a social worker', 'I am a teacher', etc. This category also includes making reference to being an administrator or moderator of a site. Users may make a claim of **direct accredited expertise** through their own accredited expertise of a given topic, or they may make claim of **indirect accredited expertise** through reference to the accredited expertise of someone they know.

Examples of direct accredited expertise:

- **Forum 1**: I work in social care and in this area, each individual assessment is unique and each family different ...
- **Forum 2**: I worked for a major law enforcement agency and we had a very generous budget for in- service training. We qualified once a month with service pistols, patrol carbines and riot shotguns.
- **Forum 3**: Neither myself, nor any of the staff, can prove beyond doubt that we're for real ...

Examples of indirect accredited expertise:

- **Forum 1**: I know two foster carers who take newborn babies. The last three children they got from birth and kept for about 12 months.
- **Forum 2**: Many soldiers I knew back in the day despised being in the military at times, comparing it to more than a life sentence!
- **Forum 3**: No examples of this power type were found in the Forum 3 data sample analysed in this phase of the project.

4.2.5. *Topic expertise through personal experience*

By making a claim to topic expertise through personal experience, a user claims personal experience of a given situation or topic. Users may make a claim of **direct topic expertise** through personal experience, or they may make a claim to having **indirect topic expertise** through personal experience if they draw on the personal experience of someone they know or are close to, for example, a work colleague or friend.

Examples of direct topic expertise through personal experience:

- **Forum 1**: We are just two and a half years in [to the adoption] and it is brilliant to see our son developing close relationships with relatives.
- **Forum 2**: I was involved with Bulgarian Nationalism for a long time. Unfortunately Bulgaria was snookered into joining the EU so I felt I had to change my focus.
- **Forum 3**: I had many dangerous situations where someone almost discovered my secret ...

Examples of indirect topic expertise through personal experience:

- **Forum 1**: Close friends of mine have just mentioned that they gave up the idea of adoption after watching us go through [adoption].
- **Forum 2**: I know a number of people who bought the military surplus in the early to mid 90's and have heard of zero exploding rounds.
- **Forum 3**: You remind me of a friend of mine who is from the UK but lives elsewhere. A very many similarities.

4.2.6. *Broad topic expertise*

By making a claim to broad topic expertise, a user makes no specific claim of personal experience but does however give the impression of general expertise on a given topic.

Examples of broad topic expertise:

- **Forum 1**: Adopted children need a lot of support. Social workers will ask you about every aspect of your lives and will want to speak to friends and family too.
- **Forum 2**: WWII was born in Versailles in 1919 when the "Allies" confiscated large parts of German industry and otherwise levied sanctions that would have caused mass starvation and the destruction of Germany.
- **Forum 3**: Morality is subjective and changes from culture to culture. Pedophilia is openly practiced in many cultures around the world ...

4.2.7. *Private knowledge*

By making a claim to private knowledge, a user uses private knowledge of a particular topic or user to make a claim to authority.

Examples of private knowledge:

- **Forum 1**: No examples of this power type were found in the Forum 1 data samples analysed in this stage of the project.
- **Forum 2**: No examples of this power type were found in the Forum 2 data samples analysed in this stage of the project.
- **Forum 3**: Just so nobody gets worried, [User X] will be offline for 6 or 7 days. She got grounded a couple of days ago and her laptop was confiscated.

4.2.8. *Citing a secondary source for authority*

Citing a secondary source for authority on a given topic can include direct quotations from canonical texts, secondary sources, or through quotations form authority figures.

Examples of citing a source for authority:

- **Forum 1**: No examples of this power type were found in the Forum 1 data samples analysed in this phase of the project.
- **Forum 2**: As Voltaire said it is difficult to free fools from the chains they revere.
- **Forum 3**: I read a report from the 60's which showed that ...

4.2.9. *Subject of law enforcement/investigations*

By making a claim to being a subject of law enforcement or investigations, a user claims that they have been arrested or convicted of a crime. While this power type may occur in more general discussion fora, it is more likely to occur in fora dedicated to criminal or extremist discussions. Users may make a claim of being a **direct subject of law enforcement/investigations**, or they may make a claim of **indirect subject of law enforcement/investigations** where they draw on the personal experiences of someone they know who has been arrested or convicted of a crime.

Examples of direct subject of law enforcement/investigations:

- **Forum 1**: No examples of this power type were found in the Forum 1 data samples analysed in this phase of the project.
- **Forum 2**: As Voltaire said it is difficult to free fools from the chains they revere.
- **Forum 3**: I read a report from the 60's which showed that ...

Examples of indirect subject of law enforcement/investigations:

No examples of indirect subject of law enforcement/investigations were found in the data samples analysed for Forum 1, 2, and 3 in this phase of the project.

5. Applying the power resource model

After developing the resource model of power outlined above, we applied it to the three datasets to answer the following research questions:

1. **Are power resources used differently across the three separate fora?**
   In this section, we explore what is generic across the three fora, how power is exercised differently between the fora, and whether the rates of features in each forum are different.
2. **Are some individuals drawing upon power resources differently from other individuals in interactions?**
   In this section, we contrast individuals who draw upon multiple power resources with those who draw upon a small number of power resources. Analysis of these features allows us to describe hierarchies of power for individuals in each of the three fora.

With the size of the current three data samples we restrict ourselves to qualitative observations and explanations, guided by some preliminary statistical comparisons.

5.1. Community level comparison

For the three tagged fora, the count of power resources were normalised by number of tokens of the smallest forum (Forum 2) and an initial comparison of use was created using the graph in Figure 1.

A cursory examination of Figure 1 shows clearly an uneven distribution of power resources across the three fora. For example, broad topic expertise is drawn upon more frequently in Forum 2 but direct personal experience appears to be more common, and thus more important, in Forum 1 and Forum 3. This was explored further by producing three hierarchy tree maps to more clearly show the relative distribution of power resources within the three fora (Figure 2).

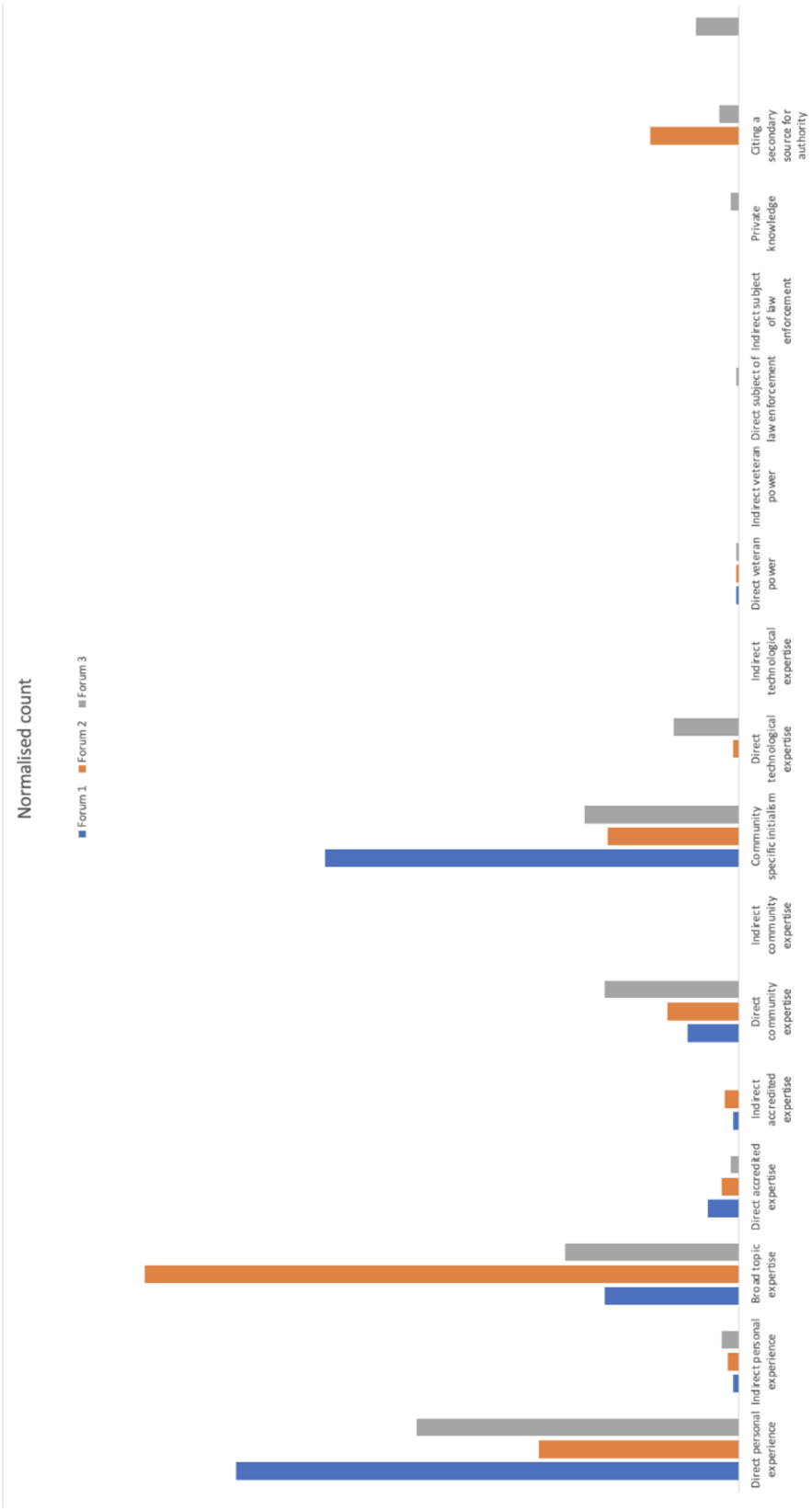
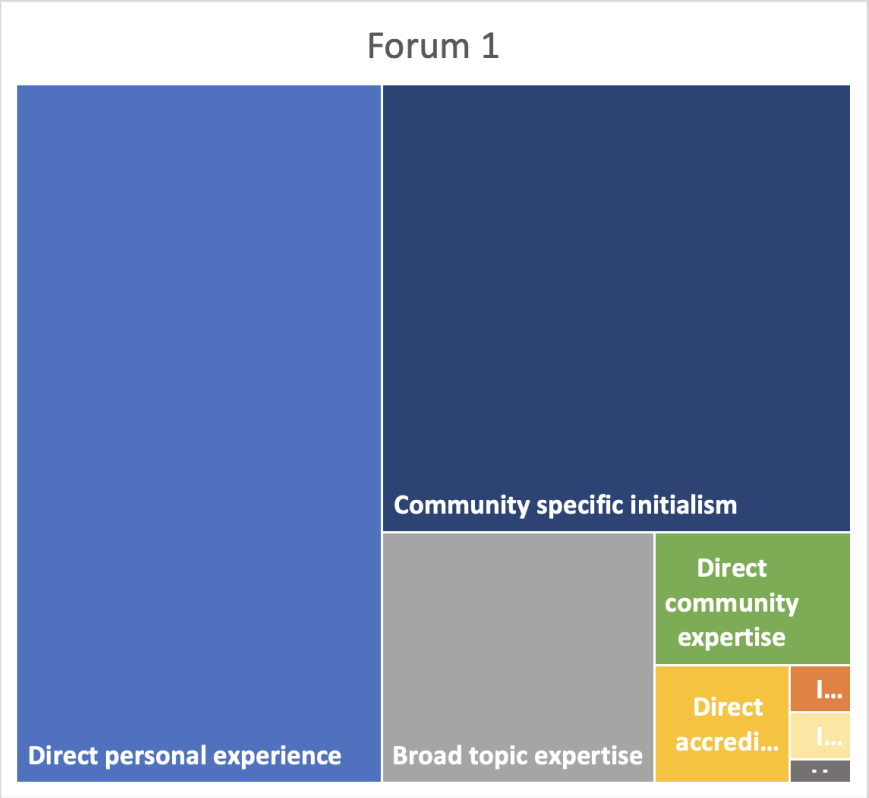
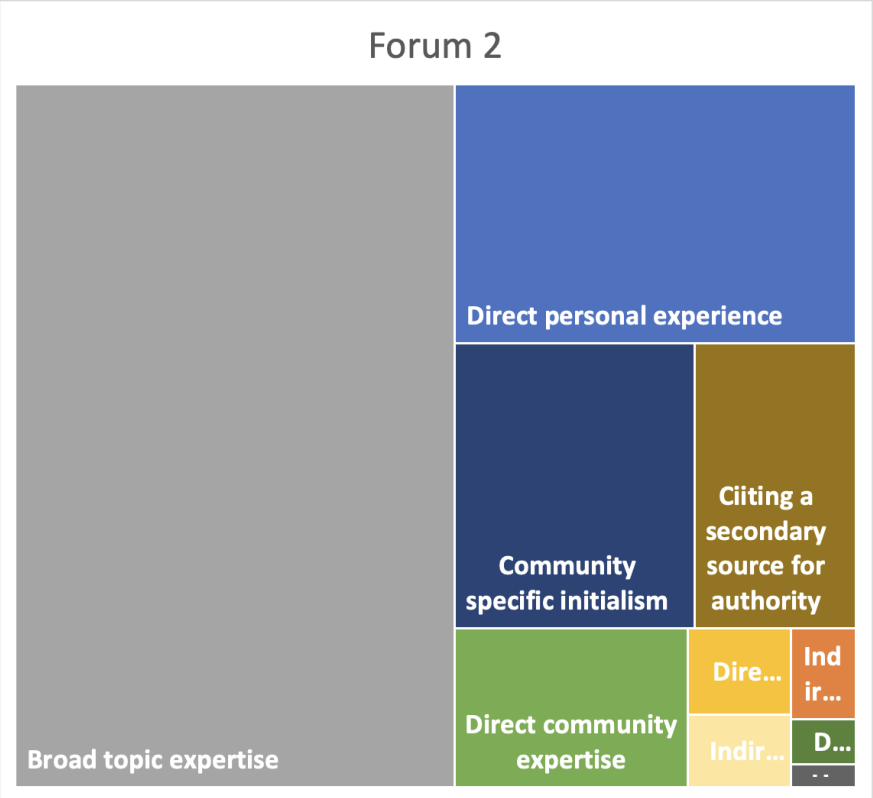


Figure 1. Normalised counts of power resources across the three fora samples.


Forum 1
Direct personal experience
Community specific initialism
Broad topic expertise
Direct community expertise
Direct accredi...
I...
I...
. .


Forum 2
Broad topic expertise
Direct personal experience
Community specific initialism
Ciiting a secondary source for authority
Direct community expertise
Dire...
Indir...
Ind ir...
D...
. .

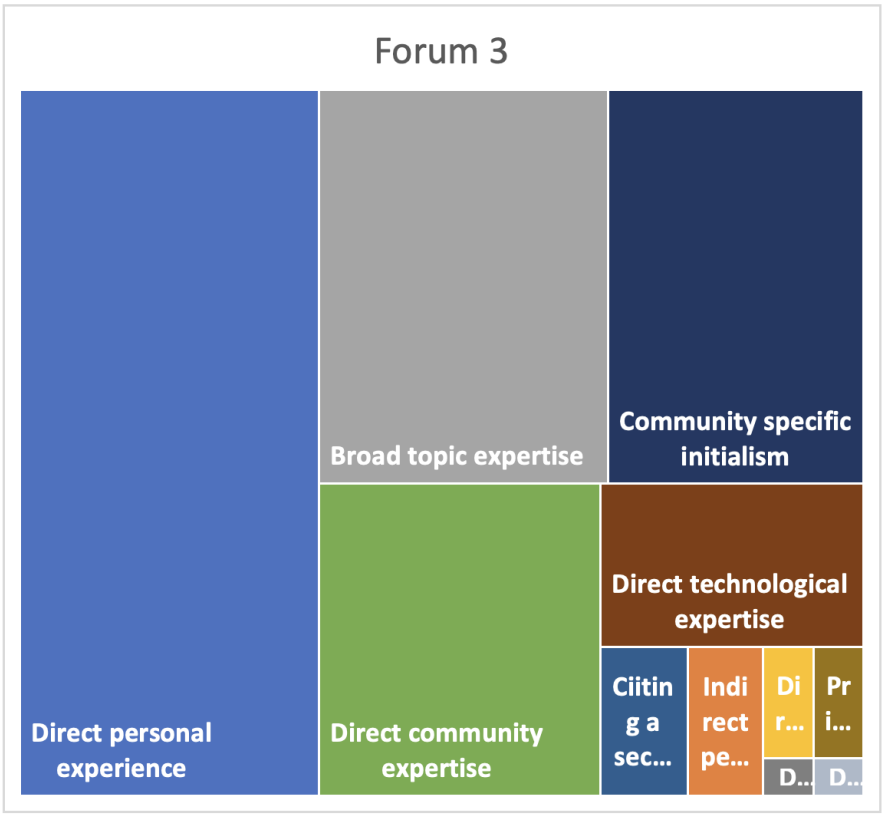


Figure 2. Hierarchy tree maps of the distribution of power resources across the three fora.

These visualisations show the similarities between Forum 1 and Forum 3 in terms of the relative proportions of direct personal experience, broad topic expertise, and community specific initialisms. In contrast, it can be seen that in Forum 2, citing a secondary source for authority is a frequent power resource. This power resource is less prevalent in Forum 3 and does not occur in Forum 1. These observed similarities and contrasts were tested using a series of χ^2 analyses, as can be seen in Table 1. NB: As the datasets were of roughly equal size, the counts of tags were not normalised between fora.

Power Resources	Forum 1	Forum 2	Forum 3	chi2	chi2 p	phi	Effect
Broad topic expertise	37	208	27	228.3	< 0.001*	0.92	large
Community specific initialism	114	46	24	71.8	< 0.001*	0.62	large
Citing a secondary source for authority	0	31	3	51.6	< 0.001*	1.23	large
Direct personal experience	138	70	50	49.5	< 0.001*	0.44	medium
Direct technological expertise	0	2	10	14.0	< 0.001*	1.08	large
Direct community expertise	14	25	21	3.1	< 0.001*	0.23	small
Direct accredited expertise	9	6	1	6.1	0.028	0.62	large
Indirect accredited expertise	2	5	0	insufficient data for chi2 analysis			
Indirect personal experience	2	4	3	insufficient data for chi2 analysis			
Direct veteran power	1	1	0	insufficient data for chi2 analysis			
Private knowledge	0	0	1	insufficient data for chi2 analysis			
Indirect community expertise	0	0	0	insufficient data for chi2 analysis			
Indirect technological expertise	0	0	0	insufficient data for chi2 analysis			
Indirect veteran power	0	0	0	insufficient data for chi2 analysis			
Direct subject of law enforcement	0	0	0	insufficient data for chi2 analysis			
Indirect subject of law enforcement	0	0	0	insufficient data for chi2 analysis			
Counts normalised by number of tokens in smallest sample (34,587 tokens in Forum 2); * sig at p < 0.003 (15 comparisons with Bonferroni correction).							

Table 1. χ^2 comparison of tagged fora

A Bonferroni correction for multiple comparisons was applied meaning that the threshold of $p < 0.003$ was used as a significance threshold and in addition phi was used as a pseudo effect size measure. Against these criteria, Table 1 shows that for seven power resource types there was a non-random distribution across the three fora. In addition to the four non-significant results, there were six contrasts for which there was insufficient coding to carry out the χ^2 analyses. These results, along with further examinations of Figures 1 and 2, were used to guide the qualitative interpretations.

5.1.1. Interpretation of Results:

Broad topic expertise was significantly more prevalent in Forum 2 than in the other two fora. Many of the discussions within this forum are general ideological and political discussions on topics such as neo-nazism, racial superiority, and political responses to national events. In this context, claims to authority centre around political knowledge. Interactants demonstrate their expertise through interactions.

A related code to broad topic expertise is **citing a secondary source**. Again, this is more prevalent in Forum 2. It occurs to a lesser extent in Forum 3 and not at all in Forum 1. The citation of political texts and figures and other sources demonstrates a deeper general knowledge of the white nationalist political movement beyond the bounds of the specific forum and presents an intellectually sophisticated and authoritative persona. In Forum 3, the sources cited differ and vary between popular and scientific sources, which suggest that paedophilia can be normalised as sexuality or behaviour. Demonstrating knowledge of these sources gives the user authority in the interaction.

Direct personal experience was prevalent across all three fora but was used more in Forum 1 and then slightly less in Forum 3 and least of all in Forum 2. Topics in Forum 3 and Forum 1 revolved more around personal problem solving and support seeking. Respondents in Forum 3 and Forum 1 thus often draw upon their own direct personal experience of similar situations to offer advice and reassurance to the Original Posters. This form of authoritative but face-protective answering has been observed in other sensitive advice-giving contexts, for example Sillence, who observes it in half of advice-giving posts in an online breast cancer support group. She notes that "[p]ersonal experience messages offer the advice seeker an insight into the choices and thought processes of a 'similar' person." (Sillence, 2013, 483). It provides a means of claiming authority to be listened to, which can be mitigated by the expectation that the interactant will form their own view. As such it leverages Cialdini (2001) principles of persuasive communications drawing on reciprocity and social proof as well as authority.

Community expertise is prevalent in all fora but manifests itself differently across the three datasets. For example, direct community expertise is significantly more prevalent in Forum 3. Given the highly illegal nature of this forum, users are constantly vigilant to potential infiltration by undercover law enforcement agents. Demonstrating community expertise is thus important to ensure that users are accepted into the forum and regarded without suspicion. Users can make a claim to authority by demonstrating their expertise in community rules and norms. Community expertise in Forum 1 is largely realised through community specific initialisms. This has the pragmatic effect of demonstrating longer term membership and thus engenders trust and authority. Whilst community expertise and initialisms do occur Forum 2, they do so at a combined lower rate than the other two fora. This might be explained through the very high rate of broad topic expertise in Forum 2 which on this site is understood as a more general form of community expertise that might extend beyond the online community.

Technological expertise is very prevalent and important in Forum 3. Because the illicit communication in this forum requires knowledge of advanced security technologies (such as TOR browsers and VPNs), demonstration of such knowledge gives a user considerable authority in this community. Technological expertise does occur in Forum 2 but at a considerably lower rate. Claims of technological expertise in Forum 2 function as a performance of general expertise of a given topic (for example, expertise in weapons systems, water drainage systems, and survivalist technologies). This contrasts with the claims of technological expertise made in Forum 3 which are generally restricted to the discussion of online security technologies.

After Bonferroni correction **direct accredited expertise** was not significant ($p = 0.028$) but as the effect size was large ($\phi = 0.62$) we further explored it qualitatively, noticing that it was highest in Forum 1, with some occurrence on Forum 2 and with

very little use in Forum 3. In Forum 1, this code mostly picked out professionals (such as social workers, foster carers etc.) and this was reflected in Forum 2 where military and ex-military roles were disclosed. No such professional identities were observed in our Forum 3 data, however a form of accreditation that was observed was that of moderator or admins who used these roles to assert authority and to police the posts of other users. Claims of this sort were not found in the data samples consulted from Forum 2 and Forum 1, but they are used elsewhere in both sites.

5.2. Powerful and powerless individuals

In our analysis of the claims of power across the three datasets, we observed that users can make multiple claims of power in a given thread. Through drawing on a greater number of power resources, some users present as being more powerful than others. We can thus see the establishment of hierarchies of power within the three fora. In the below section we exemplify these hierarchies through the qualitative analysis of a sample thread from each forum. The sample thread from Forum 1 focusses on a discussion of adoption practices and is 2970 words in length. The sample thread from Forum 2 focusses on a discussion on the nature of racism and is 3782 word in length. The sample thread from Forum 3 focuses on the discussion of the nature of different sub-fora within the site and is 1130 words in length.

For each forum, we contrast a user who demonstrates a broad repertoire of power resources and makes multiple claims of power with users who seem to draw on limited resources.

Forum 1

	No. of posts in thread	Broad topic	Personal experience (direct)	Personal experience (indirect)	Community expertise	No. of resources drawn on
User 1	2					0
User 2	1	x			x	2
User 3	1		x			1
User 4	1		x			1
User 5	1		x		x	2
User 6	1		x			1
User 7	1		x		x	2
User 8	1		x		x	2
User 9	3	x	x	x	x	4
User 10	1		x		x	2
User 11	1	x				1
User 12	4		x		x	2
User 13	1		x		x	2
User 14	1		x			1
User 15	1	x				1

Table 2. Forum 1 distribution of resources by user

User 9 in this thread draws on the broadest repertoire of claims to power. They make use of both **indirect** and **direct personal experience** on the topic of discussion, for example, they use "I know a couple who decided ..." and they report their own direct expertise through phrases such as "In my experience …". User 9 also demonstrates

community expertise through the use of **community specific initialisms** throughout their posts. In one of their posts, User 9 also demonstrates **broad topic expertise** through phrases such as "Yes, it's not the norm but I have seen it happen." in relation to a comment made by another user. In contrast to User 9, User 1 makes no attempt at claiming power or authority, their posts are limited to asking further questions of the group. User 3 makes a single claim to authority through demonstrating **direct personal experience** of the topic. They signal this experience through phrases such as "I have a similar [experience] to your husband...".

In contrast to User 9, User 1 makes no attempt at claiming power or authority, their posts are limited to asking further questions of the group. User 3 makes a single claim to authority through demonstrating **direct personal experience** of the topic. They signal this experience through phrases such as "I have a similar [experience] to your husband...".

Forum 2

	No. of posts in thread	Broad topic	Personal experience (direct)	Personal experience (indirect)	Community expertise (Direct)	Technological expertise	Citing a secondary source	Veteran Power	No. of resources drawn on
User 1	2	x							1
User 2	1		x		x				2
User 3	1	x							1
User 4	2	x							1
User 5	1	x			x				2
User 6	1	x			x				2
User 7	1	x							1
User 8	2	x	x						2
User 9	1								0
User 10	4	x			x		x	x	4
User 11	2	x							1
User 12	1	x	x		x				3
User 13	1	x			x				2
User 14	3	x					x		2
User 15	1								0
User 16	1		x						1

User 17	1	x							1
User 18	1		x						1
User 19	1		x						1
User 20	1	x							1
User 21	3	x	x		x				3
User 22	2		x		x			x	3
User 23	1								0

Table 3. Forum 2 distribution of resources by user

In the Forum 2 thread, User 10 makes claim to four separate power resources. User 10 makes regular use of **citation of secondary sources**, citing both a prominent speech of a white nationalist leader, and a political philosopher. They then go on to demonstrate other forms of power including **broad topic expertise, community expertise** through use of **initialisms**, and **veteran power** by reporting their experience from "the early days of the [community]". There are also three users who each make claim to three power resources to make claims of authority in this thread. For example, within the same post, User 22 writes 'That is really an excellent quote from [White Nationalist figure], because it is so true. I have been around here at [Forum 2] for some time, but I don't recall hearing or reading that before.'. In this post, User 22 demonstrates **direct personal experience** of the topic and they also make claim to **veteran power**. In the same post, User 22 demonstrates **community expertise** with the use of **community specific initialisms**.

In contrast, three users in the thread do not make any claims to power in their posts. They simply offer comments on the posts of others made in the thread. Ten users in the thread make only a single claim to authority, most commonly **broad topic expertise** as highlighted in the between fora comparisons above.

Forum 3

	No. of posts in thread	Broad topic	Personal experience (direct)	Personal experience (indirect)	Community expertise (Direct)	Technological expertise	No. of resources drawn on
User 1	2						0
User 2	2		x		x		2
User 3	2		x		x		2
User 4	1		x		x	x	3
User 5	2		x		x		2
User 6	1						0
User 7	1	x			x		2

Table 4. Forum 1 distribution of resources by user

In this thread, User 4 draws on three separate power resources to claim authority. This includes claims of **direct personal experience** of a topic, as exemplified through phrases such as "I have also been involved in several private forums ...". They also demonstrate **direct community expertise** through the use of **community specific**

initialisms and through references to their own participation in the online community. User 4 also shows **technological expertise** through the use of technical jargon.

User 1 and User 6 make no claim of expertise. Their contributions to the thread simply include requests for links to online abuse media and requests for details of users' experiences on similar fora. Four users make claim to two sources of power in the thread. For example, User 2 provides **direct personal experience**, using terms such as "I was a member of ...". User 2 also demonstrates **direct community expertise** through use of community specific initialisms and displaying general knowledge of the forum.

5.2.1. Interpretation of Results

Overall this analysis of individuals and how they make claims to power supports the idea that those who can access multiple power resources within an interaction perform generally more powerfully than those who have limited resources to draw on. By making a greater number of claims of power in these fora, these users make a greater claim to be listened to in the online community. Contrasting high resource individuals with low resource individuals within and between communities shows that those who can draw on multiple power resources are rare (see Table 5). It is not obvious in the interactions studied here that this stronger claim is recognised by the other discussants but follow up studies involving bigger datasets will attempt to examine this, through examining how interactants orient to these high resource individuals. What has become apparent through this analysis though is that the assertion of authority is performed more strongly through the use of diverse claims to power.

	Forum 1	Forum 2	Forum 3
Users who make no claims of power	1	3	2
Users who make claim to 1 source of power	5	10	0
Users who make claim to 2 sources of power	7	6	4
Users who make claim to 3 sources of power	0	3	1
Users who make claim to 4 sources of power	1	1	0

Table 5. Forum 1 distribution of resources by user

6. Conclusions

Although this study is preliminary and is based upon the coding of a limited dataset (72 threads, comprising 160,000 words in total) it is already possible to see that this is a fruitful approach to understanding the operation of power in and across different fora and by the interactants within those communities.

By developing a resource model of performed power in interaction we are able to observe the similarities and differences between these online communities. In response to our first research question - *Are power resources used differently across the three separate fora?* - our analysis demonstrates that cultures of power manifest very differently across the three fora studied in this paper and this thus highlights that power is not a monolithic construct.

To directly address our second research question - *Are some individuals drawing upon power resources differently from other individuals in interactions?* - our analysis shows that we need to move away from the idea of powerful and powerless individuals, to

recognising that an individual may be able to access more or fewer power resources in any given interaction and thus be able to perform more or less powerfully. Their access to power resources may be constrained by their own history or experience, or by the nature of the interaction in terms of topic or content. Some individuals may have a broad repertoire of power resources to draw on, but they may not be relevant for use in a specific interaction or community. The idea of a powerful individual is thus reformulated to be an individual who has access to multiple power resources and finds themselves in an interaction in which there are opportunities to use them. An individual with a greater repertoire of power resources is thus more likely to be able to perform powerfully within any given interaction.

Our model thus far has identified nine main power resources across the three communities (with some additional subcategories), but we make no claim that this is a closed set or even an exhaustive list for these fora. What we have shown is that there are a recurring set of power resources that can be found across the three different online communities with very different interests and cultures. This highlights the transferability and potential generalisability of our resource model of power in interaction. Further work on the model requires coding of larger datasets and to achieve this we are exploring semi-automated coding of the power resources. This will open up analyses of a range of different fora and the opportunity to pursue different research agendas, such as investigating how interactants orient to high resource individuals, or how individuals' claims of power develop over time.

Our working definition of power, as noted in the introduction, highlighted that in our online contexts, an interactional definition of power would be more helpful than an institutional or social definition of power. Further to this, we also noted that power, both in definition and operation, varies considerably by context. In this study, the most notable contextual factors are that the data are from online interactions and that the participants are, to varying degrees, anonymous. As noted in the introduction, the study of power in CMC cannot depend upon correlations with traditional institutional or social categories of power but must mostly arise from analysis of the linguistic content of the interaction. This is true of most CMC interactions but becomes particularly important in forensic studies of highly-anonymised dark web fora. Our approach accounts for Culpeper's observations that there may be many different types of power at work in interaction, which can intersect in complex ways. By focussing on the resources that individuals can draw on in interaction to assert their claim to be listened to, we further contribute to this burgeoning body of pragmatic research in a way that can be particularly useful in CMC analyses. Furthermore, by conceptualising individuals' access to power in interaction as part of a resource model, our theory aligns with current writing on language and identity (Grant & MacLeod, 2020; Johnstone, 2009). This could be an intriguing direction for research in this field.

Whilst we continue to develop this approach to analysing power in online fora, we believe it can already provide valuable insights for the forensic linguistic analysis of online criminal interactions. Understanding a person in terms of their power resource provides a new way of describing different types of users in online fora, which may be useful for investigation and for the better understanding of specific roles and hierarchies of power in online fora where there is an absence of explicit institutional and social power structures.

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