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The Interplay of Authority and Expertise in Online Self-Improvement Communities

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PhD Science and Technology Studies

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Declaration

I declare that this thesis was composed by myself, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or professional qualification except as specified. Parts of this work have been published in *New Media & Society*.

Tim Squirrell

12th June 2019

Abstract

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Title of thesis:	The interplay of authority and expertise in online self-improvement communities		

Insert the abstract text here - the space will expand as you type.

In online environments, users who wish to learn anything face several problems. Other users are usually anonymous or pseudonymous, information is plentiful and its quality variable, and it can be difficult to discern reliable information source. This thesis draws on the Strong Programme in the Sociology of Scientific Knowledge to explore how users of self-improvement communities on reddit, a major social media platform, negotiate these issues. Through conceptualising expertise as a status gained through an audience delegating their epistemic authority, the thesis explores the interplay of authority and expertise to analyse how users decide who, and what, to believe.

Reddit hosts tens of thousands of specialised communities ('subreddits'). Using a method called a 'lurking ethnography' constituted through observation supplemented with interviews, the author analyses two subreddits, r/paleo and r/nootropics. r/paleo hosts adherents of the 'paleolithic diet', whilst r/nootropics concerns with 'cognitive enhancement' in all forms.

Analysis reveals how users construct expertise, negotiating tensions to maintain the epistemic integrity of their respective communities. The concept of 'platform dialectics' is developed to describe how reddit's affordances influence the

relationships between users and volunteer moderators. Users' relationships with medical professionals and science are examined, as well as the discursive formations that attract delegations of authority, and users' utilisation of boundary work to police the definition, remit, and effects of the substances they consume. In light of limited evidence and the ideology of epistemic individualism propagated by both communities, many users engage in self-experimentation practices.

The thesis concludes that users of these communities do not look for objectivity in experts, instead exhibiting 'aspirational subjectivity'. As well as creating evidence for themselves, they listen to those who have walked the path they themselves wish to walk or appear to have diminished subjectiveness, or who are able to synthesise and present information in ways that manifest the accoutrements of science. Key contributions include offering a conceptualisation of expertise which burdens those who wish to be considered experts to demonstrate their skill, rather than asking audiences to discriminate between those who do and do not know what they are talking about. The thesis also elucidates the ways epistemic norms and knowledge-making practices are created, negotiated, and maintained in online communities.

Lay Summary

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Insert the lay summary text here - the space will expand as you type.

This thesis addresses the question of how and why people come to believe particular things on the internet. To do so, it looks at online self-improvement communities: places on the internet where people come together to discuss their problems, their lives, and their efforts to work on making both of those things better. Specifically, it focusses on two communities on the social media platform reddit: r/paleo and r/nootropics.

r/paleo is for people with an interest in the paleolithic diet. It seeks to promote health and wellbeing by encouraging users to consume a diet free of grains and other foods that became staples of human diet after the 'Neolithic revolution', which took place around 10,000 years ago and saw humans transitioning from a nomadic hunter-gatherer lifestyle to one in which they lived in fixed locations and farmed the majority of their food. r/paleo adherents believe that because humans existed as hunter-gatherers for a long time prior to the Neolithic revolution, their genes have not yet had a chance to adapt to our new diets. They say we should eat the kinds of foods that would have been eaten before mass agriculture in order to optimise our health.

r/nootropics is concerned with 'cognitive enhancement': using drugs, supplements, and other means to try to improve the functioning of the human mind. Different users try different things. Some take caffeine pills with L-theanine, the active

ingredient in green tea, to increase their alertness whilst avoiding anxiety and jitters. Others take modafinil, known as a 'study drug' due to its use by students for long periods of work. Still others experiment with less well-known compounds, or illicit drugs such as MDMA and LSD.

Data on these two communities was gathered using a 'lurking ethnographic' method, where the author spent an extended period of time reading what users were saying, as well as external materials they linked to. This was supplemented with interviews, where the author spoke to users and 'moderators' of each community. The moderators run the communities, setting and enforcing rules, as well as having a lot of say over how the site looks to visitors.

The findings of the thesis are divided into three chapters. The first of these looks at how the structure of Reddit itself influences the kinds of discussions that people have. It focusses first on reddit's voting system, which allows users to influence the visibility of content through voting it 'up' or 'down'. This is shown to be a major influence on how users conduct themselves, as well as who is seen as credible or authoritative. The relationship between users and moderators is the second area of focus, with the term 'platform dialectics' used to describe how each group responds to the other's attempts to make the community look, feel, and function in a certain way.

Second, the thesis considers how users relate to different kinds of authority and evidence. Both r/paleo and r/nootropics have complicated relationships with medical doctors, which are explored. They both also use the vocabulary and tools of science to make arguments, for example citing their sources, criticising what they see as over-generalisations, and engaging with peer-reviewed journal articles. The idea of 'boundary work' is used to explore how users try to police what is and is not considered to be 'real' paleo or 'real' nootropics.

The third and final findings chapter looks at how users create evidence for themselves. In both r/paleo and r/nootropics there is a strong tradition of 'self-experimentation', where users try different things and see what works for them and what doesn't. This is important, because in both areas there is a lot that is uncertain, and a lot of evidence is not particularly high quality. Some users quantify these

experiments, tracking things like how many steps they're doing, how much they weigh, and even the levels of various components of their blood. Others are more concerned with how they feel than what numbers they are producing. In addition, users spend a lot of time seeking and giving advice based on personal experience. The thesis argues that these users exhibit 'aspirational subjectivity', where they tend to listen to others they see as similar to themselves, but with more experience in the field than they have.

The thesis makes a number of important contributions to the fields of Digital Sociology and Science and Technology Studies. First, it addresses a popular understanding of 'expertise' which understands experts as people who have a certain amount of experience in an area. It pushes back on this, arguing that instead experts should be understood as those who are given the *status* of experts. This has the effect of pushing people who want to be known as experts to make sure they know how to present themselves in a way that will make audiences listen to them.

Second, the thesis contributes a deeper understanding of how users, moderators, and other groups interact on web platforms, and how these interactions are influenced by the design and structure of the platform itself. Scholars in this area often emphasise either platform structure or power relations, and this thesis creates a synthesis of those two things.

Finally, the thesis makes a contribution to our understanding of how and why people come to believe particular things on the internet. In a context where they want to change their bodies and lives, they tend to listen to others they see as being similar to themselves, but with more experience. They also exhibit 'epistemic pragmatism', where the things they see as 'true' are the things that work for them.

The author's hope is that these three contributions taken together will make a significant impact on how we understand the ways that people in online spaces come to argue, believe, and give credence to different ideas, evidence, and arguments.

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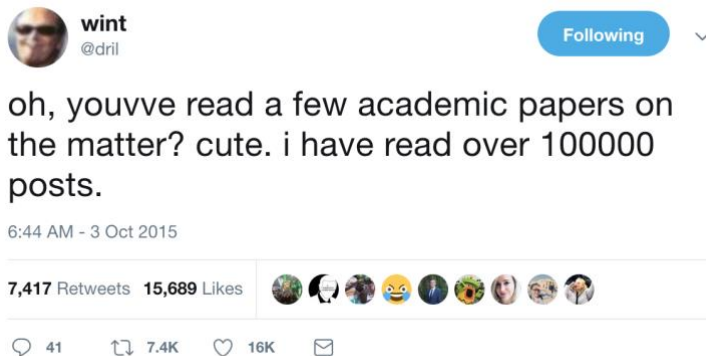
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Any mistakes that remain in this work are my own, and nobody else's.



1. Introduction

As someone who interacted on internet forums and played online games from a young age, I have wondered for a long time how and why people decide to believe what they read or hear on the internet. Specifically, I wanted to know whether the features of many online spaces – anonymity, ease of search, difficulties in verifying provenance and assessing credentials or experience – made a substantive difference to how people assess information and form beliefs. As a student of the philosophy of science, I came to realise that most people, most of the time, rely upon others in some way or other for the information that allows them to form their beliefs (Goldman, 2001; Hardwig, 1991, 1985). Other people are our ‘experts’. We have the authority to decide how to conceptualise the world for ourselves, but if we wish to communicate with others then we have to build a shared language and idea of meaning for both objects and concepts. We allow experts to guide us toward that shared meaning. Early on in life, parents and teachers are the experts. As we grow, the sources of knowledge pluralise: television, books, friends, family, community, religion, and the internet all play a role in the beliefs we form about the world (both descriptive and normative).

The last of these is the newest and the least well-studied. The internet hosts a number of forms-of-life rivalling the physical world, and no one study can hope to account for the interplay of authority and expertise in all of them. All claims to knowledge are localised. However, there are commonalities between platforms, their affordances,¹ types of communities, and demographics. Saying something about one set of people – those who participate in the paleo community on reddit, for example – allows us to consider whether this might also apply to, say, keto dieters on another internet message board or in a Facebook group. This thesis will explore how users of two ‘self-improvement’² communities on reddit - r/paleo and r/nootropics – delegate authority, confer expert status, discuss and dispute evidence and knowledge claims, and form and act on beliefs about the world.

¹ The features of an environment that facilitate or constrain particular actions on the part of the user (Bucher and Helmond, 2018; Gibson, 2014).

² Communities focussed on individuals’ pursuit and attainment of particular goals with respect to their bodies, minds, and other aspects of their lives. The term is similar to ‘self-help’ insofar as both imply that the actor is taking agency over a change that they might otherwise seek professional aid in making.

Initially set up in 2006 and gaining significant popularity in the 2010s, reddit is a website that currently sits at #8 in global rankings of unique website visitors (Alexa, 2018). Reddit contains tens of thousands of forums, called ‘subreddits’. Users can ‘subscribe’ to receive updates from subreddits, which range from massive platforms (r/politics, r/funny, r/fitness) with millions of subscribers and hundreds of thousands of active users per day, to tiny niche subreddits with a handful of users. Its culture leans heavily towards what might be described as ‘nerdy’, with conversations frequently incorporating references to video games and other typically nerdy pastimes, as well as internet culture (Massanari, 2015). Straight white American middle-class men aged 18-30 make up the plurality of its users. In part due to its size, as well as repeated turns in the media spotlight and an open-source framework and accessible API, reddit is beginning to be subject to increasing numbers of academic studies. This is one such study, taking two mid-sized communities concerned with self-improvement (broadly construed) as case studies to understand how knowledge is made, contested, and mobilised. r/paleo is a home for adherents of ‘paleolithic’ diets, which attempt to emulate the kind of nutritional intake that would supposedly have been common before mass agriculture (Cordain, 2010; Sisson, 2012). r/nootropics is dedicated to ‘cognitive enhancement’ in all forms, including (prominently) the ingestion of supplements and drugs as a means of improving one’s mental capacities. Both forums are concerned with creating and disseminating knowledge of particular kinds. r/paleo and r/nootropics have ~140,000 and ~180,000 subscribers respectively and provide representations of the intersection of expertise with platform affordances in environments where shared epistemic ground and robust evidence are rare. This renders them rich sites for exploration for a researcher interested in how knowledge is constructed and contested, particularly when paired with the extensive work done around self-experimentation and the ‘Quantified Self’ movement (Lupton, 2016; Wexler, 2017). Both subreddits receive extended exposition in Chapter 2.

Expertise and knowledge

The conceptual focus of this thesis is on authority and expertise. ‘Expertise’ is, for some theorists, a particular level of facility with a subject or skill (Dreyfus and Dreyfus, 1991). This model, developed and popularised by Dreyfus and Dreyfus, conceptualises expertise as one of the highest levels of skill acquisition. It is characterised by absorption in a task, intuitive decision-making, holistic understanding of their environment and conditions, and situational recognition of similarities between past and present problems (Dreyfus and Dreyfus, 1980). This model relies on *tacit knowledge*, which is difficult (or impossible) to transfer between people through written or

verbal communication, and can only be learned by doing (Collins, 2010, 2001; Polanyi, 2009, 1958). One of the most influential current models for expertise, propagated by Collins and Evans since the early 2000s (Collins and Evans, 2007, 2002), builds upon the Dreyfus and Dreyfus model. They draw on rule-sceptical approaches to Wittgenstein in the Science and Technology Studies (STS) literature. These approaches argue that no set of rules can contain instructions for its own interpretation. Consequently rule-following is a fundamentally socially embedded practice which relies on internalising norms of how rules are supposed to be followed in any given context (Bloor, 2002, 1983; Wittgenstein, 1958). Collins and Evans argue that expertise is characterised by tacit knowledge acquired through long-term immersion in a particular form-of-life. This means that expertise is fundamentally *embodied* in humans.³

Simultaneously, studies of expertise in STS have often focussed less on the process of skill acquisition and the embodied status of being an expert, and more on the social relations implied by the very concept of expertise and the lionisation of those with particular forms of knowledge or expertise. Seminal work in this field includes Steven Epstein's study of HIV/AIDS patients (1996, 1995), Brian Wynne's research on Cumbrian sheep farmers (1998), and Sheila Jasanoff's work on science policy advisors (1994). Much of this research focuses on what some call the 'problem of legitimacy': if democracies are going to rely on experts to tell them about the world and inform policy, how can they ensure that these experts do not abuse this power or engage in self-serving or exclusionary behaviours? Work in this area often invokes the idea of 'lay experts' or 'lay expertise' as a means of verifying the expertise of those who lack the credentials which are often seen as the *sine qua non* of expertise, such as AIDS patients or sheep farmers.

The work of Collins and Evans is in part a reaction to this STS research. They make the argument that Science Studies has gone too far in its attempts to problematise credentialism and resolve the problem of legitimacy (Collins and Evans, 2002). They instead argue that the 'problem of extension' is now of primary importance: how can we ensure that we do not allow *anyone* to claim to be a scientific expert, and therefore have access to policy-making and other forms of power? This is the basis for the argument that expertise should be defined by *experience*,

³ There is some debate as to what level of embodiment is needed, with Collins more recently advocating *minimal embodiment* as a necessary condition for expertise, following critiques which advance the argument that bodily engagement is necessary for full understanding (Selinger et al., 2007). This in turn owes a debt to Foucauldian studies of human bodies as objects of discipline to be tamed and moulded (Foucault, 1991).

which is itself a function of tacit knowledge gained through immersion in a form-of-life. In Chapter 3 I argue that this move is ill-advised. It is misguided not only because the problem of extension is nowhere near as pronounced as Collins and Evans maintain (Jasanoff, 2003; Owens, 2011; Rip, 2003; Wynne, 2003a); it is problematic because it places the burden of *recognising* expertise on comparatively inexperienced audiences, instead of asking would-be experts to prove that they deserve to be listened to.

Simultaneously, this thesis is also about *ways of knowing*. The communities under study selectively reject some ways of knowing, specifically those put forward by some parts of the medical community and government guidelines. Members of r/paleo do not recognise the American Heart Association as dietary experts, rejecting the evidence they produce for the link between dietary fats and ill health. They do so in part because of the *embodied* evidence of other paleo dieters, who appear to be the picture of health or who have recovered from severe chronic illnesses, all while consuming diets that would be proscribed by medical and state authorities. Similarly, r/nootropics users distrust the US Food and Drug Administration, which they see as captured by corporate interests. For example, many r/nootropics members have used the herb kratom as a way of withdrawing from opioids. They say that current recommendations from the Department of Health and Human Services to make kratom a Schedule I drug (the same as heroin or LSD) demonstrate that the US government makes policy that serves pharmaceutical companies (who profit from the current opioid epidemic) rather than its citizens. They reject the claim made by the Drug Enforcement Administration that kratom is a drug of abuse, instead believing the evidence of other r/nootropics and r/kratom users who claim that the drug has significantly improved their quality of life. The users of both subreddits subscribe to particular *epistemes* (Foucault, 1980: 197) which inform the sources they choose to believe or disbelieve, as well as the kinds of evidence they take as reliable or credible. It is worth noting from the beginning that both communities are highly critical of the ‘establishment’ in their areas of knowledge. r/paleo rejects the opinions of many mainstream medical and dietary professionals, whilst r/nootropics pushes back against government bodies, as well as some medical professionals. This thesis, then, specifically concerns communities which emphasise alternative ways of knowing. It would have been a very different thesis had the chosen communities been,

say, photography enthusiasts, amateur programmers, or other amateur or enthusiast communities where there is less likely to be the same kinds of tension over knowledge and trust.⁴

Because these communities have very specific approaches to knowledge, evidence, credibility, authority, and expertise, in this thesis I use the framework of *epistemic relativism* developed by the Edinburgh School (or ‘Strong Programme’) in the sociology of scientific knowledge (Barnes et al., 1996; Bloor, 1991, 1981). Epistemic relativism requires the suspension of preconceptions about the truth value of what people within a community believe, taking the spotlight away from whether their statements are ‘factual’ or ‘accurate’ and training it instead on how they come to believe or argue particular positions. Drawing on the work of Martin Kusch and others, I also adopt the stance of *communitarian epistemology* (Kusch, 2002). This develops the argument that knowledge is defined as meaning shared by groups of people, and that different groups therefore have different knowledges. A detailed exposition of this theoretical framework and its implications for the present study is contained in Chapter 3.

How affordances structure authority and discourse

The interplay of authority and expertise in online communities is strongly influenced by the structure of the platforms upon which those communities are built. Some theoretical frameworks imagine technologies as ‘texts’ with infinite possible ‘readings’ or ways of being used (Grint and Woolgar, 1997). Others object that there are properties that are intrinsic to particular technologies which cannot be altered by social constructions: for example, a bullet fired from a gun has intrinsic effects on human flesh (Kling, 1992: 362). The ‘third way’ proposed between these two positions is that of ‘affordances’ (Gibson, 2014). Affordances are conceptualised as the features of a technology which facilitate or constrain particular courses of action (Hutchby, 2001). They do not narrowly dictate how users interpret technologies, but nor do they allow all technologies to be completely open to interpretation.

This thesis utilises the concept of affordances as a means of understanding how the architecture of web platforms influences discourse. This is not a new concept: affordances have already been

⁴ This is not to say that these communities do not have their own tensions and issues over knowledge, authority, and expertise - I am certain they do - but rather to emphasise that the *kinds* of issues encountered in self-improvement communities that resist traditional modes of authority are likely to be different.

explored as they apply to social media and other internet locales (Barry et al., 2003; boyd, 2010; Bucher and Helmond, 2018; Graves, 2007). For example, reddit (the platform which hosts my field sites) has affordances including pseudonymous accounts which are easily created and persist across time (Massanari, 2017), division of material across multiple different forums ('subreddits') which are themselves easy to create, and large amounts of control over the appearance and rules of subreddits ceded to volunteer moderators (who either created a subreddit or have subsequently been recruited to help run it). I make the argument in this thesis (primarily in Chapter 5) that studies of the affordances of web platforms often overlook or marginalise the relationships between different user groups that affordances mediate. I use the term *platform dialectics* to describe how affordances are deployed and interpreted by different users with different (and often conflicting) visions of what their community should look like. This focus emerges from the need to understand not only how individual features of an environment facilitate and constrain certain types of behaviours, but also how those affordances interact with and reshape pre-existing power dynamics between various stakeholders within the community. Given that multiple power strata (e.g. user, moderator, administrator) are a common phenomenon across many platforms, this concept contributes to studies of online communities in terms of understanding the relationships between various kind of user and how these are co-constructed with platform affordances.

What are online communities?

Since their inception, groups whose interactions take place primarily or exclusively on the internet have been subject to academic discussion of whether they do or do not constitute 'communities' (Baym, 1995, 1998, 1999; Jones, 1995, 1998a; Kollock and Smith, 1999). Against this proposition are wielded definitions of communities as geographically co-located sets of people, which necessarily exclude online groups. Authors in Internet Studies have argued that online communities exist, but are defined primarily by a 'feeling or sense of collectivity' (Jankowski, 2002). Fernback (2007) argues in a *New Media and Society* article that this confounding of the definition and concept of community is not limited to the internet, but is instead a much wider issue in sociological research:

The term community has lost much of its meaning in western culture because the discourse about it tends to be totalizing. Community is a political, cultural, economic, and technical buzzword. Community is descriptive and prescriptive, local and global, spatially bound or boundaryless, public

or private, organic or mechanical, intentional or accidental, purposive or aimless, oppressive or liberating, functional or dysfunctional. It can be a shared interest, shared kinship or shared space. It can be physical locality or collective interests or collective memory or crisis constituencies or marketing devices. (Fernback, 2007: 52)

Crucially, she goes on to show that participants in online groups themselves possess ‘incongruous understandings of the character of online social relations’ (ibid.). Specifically, users often use ‘community’ to describe their relationships with others whilst also arguing that these virtual communities do not have ‘enough genuinely invested members to develop sacred customs, folk legends, and proud legacies in these spaces’ (ibid: 62). The conclusion I draw from this is not that we ought to jettison the community descriptor, though it clearly does not fully and accurately capture the forms-of-life embodied by users participating in online spaces. Instead, ‘rather than asking whether or not a cybercommunity is or isn’t real community, a long-term perspective on the cultural significance of cybercommunity focuses on how some users of online technology have created meaningful constructs of social interaction in the online arena’ (ibid: 63). I use the term ‘community’ to describe the spaces subject to research in this thesis because this is the term used by participants themselves. I do so without particular intention as to what ‘community’ means in this context.

Nevertheless, it is worth querying what characteristics these communities have that demarcate them not only from physical communities, but other online communities. In Chapter 5 I make the argument that reddit’s communities are particularly ephemeral: users often subscribe but never contribute, move on relatively quickly to other communities that are more active or more engaging, or contribute without noting or caring precisely who they are talking to. The ease of participating in and creating different subreddits with the same account, as well as the well-documented tendency of communities to decline in perceived quality of content as they become larger and more active, means that there is a constant stream of users moving from place to place. Founding members leave or go inactive, and subreddits that have been around for years often have few to none of their original users still actively posting. However, users still feel that r/paleo, r/nootropics, and places like them are communities in some sense. They are communities bound together more by a common idea or identity than a particular locality or set of participants.

There is a particular term that might usefully be applied as an analyst's category to these communities. 'Communities of practice' refers to spaces in which knowledge is 'created out of a dialogue between people's tacit and explicit knowledge' (Akrich, 2010). The term, coined by Lave and Wenger (1999, 1991), is meant to encompass 'relatively autonomous and informal groups ... made of people who are engaged in similar activities and communicate regularly on these activities' (Akrich, 2010: 2.1). Whilst Akrich uses it to refer to patient activist groups, the term's utility is found in its ability to recognise the alternative knowledge practices engaged in by members of the communities it describes. Akrich notes that communities of practice seem to revolve around three characteristics: a shared definition of what constitutes the basis of the group; intensity and simplicity in mutual relationships; and the existence of common 'objects' which are either products derived from exchanges or objects supporting and transforming the group and/or the individuals within the group. The members of r/paleo and r/nootropics share a definition of the basis of their groups, as well as mutual relationships that are both simple and intense. This will become clear in the rest of the thesis. The latter characteristic is embodied by the threads, posts, comments, FAQs, and other resources produced by the members of the two forums. The process of socialisation of a newcomer is one in which they are introduced to the 'must read' threads and FAQ sections that detail the basics of the ontology and epistemology of the community. If they stay, their understanding of the world (and often their own body) is transformed as a result of their reading and engagement.

It is worth noting that these are two communities with very specific outlooks on the world. The worldview of the paleo community eschews mainstream nutritional advice on, for example, the consumption of saturated fats and wholegrains. The nootropics community considers the brain an object for self-experimentation through the consumption of various supplements and drugs that many people would be hesitant to consume. Moreover, they concern issues where the amount and quality of available scientific evidence is rarely (if ever) sufficient to derive definite conclusions about the correct course of action. Consequently, they have specific knowledge-making practices that lean heavily on ideas of self-experimentation and experiential knowledge. Authority is delegated in ways that are different to communities that subscribe to 'mainstream' conceptions of the world, because the communities have formed in part as a reaction or resistance to these worldviews. Immersing oneself in either community is a project that involves replacing many ideas of how the world works. These are communities of practice both in the sense that they concern an epistemic project, and in that they involve transforming individuals through the 'objects' they produce.

The structure of this thesis

This thesis contains six substantive chapters. Chapter 2 serves as an extended introduction to r/paleo and r/nootropics, as well as a review of the extant literature on communities and movements related to the paleolithic diet and nootropics. My review of literature related to paleo includes the small amount of social scientific work specifically focussed on paleo communities, as well as research which bears upon ‘low-carbohydrate, high-fat’ (LCHF) diets, and exposition of the paradigm of ‘nutritionism’ which paleo pushes back on. I move on to literature related to both the nootropics community specifically and cognitive enhancement more generally. I examine two further literatures that are relevant to both communities: first, on ‘self-experimentation’ and self-tracking practices, which are common to members of both communities who want to create evidence for themselves; second, on online patient communities, which are relevant insofar as they also make extensive use of experiential knowledge.

Chapter 3 builds the conceptual backbone of the thesis. I first walk through my research questions, which are:

RQ1. How do users of online self-improvement forums negotiate the problem of expertise (understood as deciding who and what to believe)?

RQ2. How are the features and affordances of online platforms used to mediate issues of authority, credibility, and trust in areas of life with considerable scientific uncertainty?

In the process of formulating and explaining these questions, I flesh out the normative realist perspective on expertise developed and advocated by Collins and Evans (2007, 2002). This influential account attempts to resolve the ‘problems of legitimacy and extension’ associated with expertise by arguing that experts are defined by their tacit knowledge of a subject area gained through long-term immersion in a form-of-life. Speaking fluent English is a form of expertise, ubiquitous in Britain; being able to talk about particle physics is also a form of expertise, though one possessed by fewer people. Experts are experts, and it is the responsibility of audiences to recognise this fact and discriminate between those who possess expertise and those who do not. I make the argument that what Collins and Evans describe is not expertise, but *skill*. By

removing the attribution of expert status by an audience from the equation, they abrogate the responsibility of those who claim expert status to be intelligible to audiences. I then advance an account of expertise which understands it as a status that is attributed by a particular audience. This hinges on a conceptualisation of *epistemic authority* rooted in the Strong Programme in the Sociology of Scientific Knowledge, which understands knowledge as a conception of meaning shared by a group of people. Epistemic authority is the ability to make decisions over what kind of meaning to ascribe to objects and concepts in the world. In order for us to say that we know much about anything, we delegate our epistemic authority to others with greater experience than us in particular realms. In r/paleo, r/nootropics, and communities like them, I argue that this delegation is often done through an *aspirational subjectivity*: the person attributed expert status is thought to have walked the path which the person doing the delegating wishes to walk, and is able to help them on that basis.

Chapter 4 deals with methods. I begin with a primer on reddit, the platform that hosts the communities I have studied. From there I explore existing research on online communities before explaining and justifying the *lurking ethnography* method I adopted for this piece of research. This method involved immersing myself in the communities by consuming the media and literature they consume, as well as spending a significant period of time reading new posts as they were submitted. I triangulated my understanding through interviews with users, including moderators. The rest of the chapter deals first with ethical issues, then with the limitations of this means of research, and concludes with a positionality statement regarding my own experiences of and interest in this kind of community.

Chapters 5 through 7 detail the research findings. Chapter 5 introduces and builds up the concept of *platform dialectics*.⁵ This describes a continual tacking back and forth between different groups on reddit, including end users, moderators, and administrators. Those with power over the affordances of the platform (rules, FAQs and other public goods, and so on) often have a vision of how they would like their community to look and function. They deploy affordances with the aim of shaping communities into these visions, but other groups within the forum respond in ways that are unpredictable and often inimical to those of administrators and moderators. The chapter deals first with the role of *karma* in belief formation. Karma is a central feature of reddit: a tally of points that are gained and lost as other users vote on one's submitted

⁵ Parts of this chapter have been published in altered form in *New Media and Society* (Squirrell, 2019).

content and comments. This system shapes discourse on reddit in a variety of ways, which are explored in the chapter. From here, I introduce the concept of *platform discipline* to explain how moderators attempt to use a variety of affordances in order to enact their vision of the community and create a foundation upon which knowledge can be built. The aim of the chapter is not only to explore these mechanisms of interaction in depth, but also to inculcate an understanding of the environment in which r/paleo, r/nootropics, and other communities live and converse. This informs the detailed discussion in the second and third findings chapters.

Chapter 6 concerns the ways users of r/paleo and r/nootropics utilise existing modes of discourse to construct and negotiate authority. I begin with a discussion of how each community polices vested interests and bias, issues which threaten to undermine their epistemic projects. r/paleo specifically contests the dietary expertise of the medical community, and I explore this through the lens of a controversy about coconut oil. r/nootropics, one of the largest communities of its kind, has significant influence over which vendors are seen as reputable. I explore how they negotiate issues of bias and vested interests in this area. I then move on to discuss how science, its vernacular, and its accoutrements are used as tools for negotiating how authority is delegated. This begins with a discussion of credentialism, finding limited instances in which formal educational credentials are used as tools of authority. I then examine citation practices and the deployment of methodological critiques to further analyse how science – and the idea of scientific discourse – is utilised to garner expert status. The third part of this chapter concerns boundary work: how notions of what is and is not ‘really’ the paleo diet, or a nootropic, are deployed for rhetorical purposes. This extends into a discussion of paleolithic and nootropic *imaginaries*, where community members use their imagination of what the paleolithic period was like, or what nootropics ought to do, in order to win arguments in r/paleo and r/nootropics. The final part of Chapter 6 leads into Chapter 7. It concerns the use of ‘hedging’, a discursive tool which emphasises the limits of one’s knowledge and experience. Its characteristic use by experienced and well-regarded members of the community has led to it being seen as a marker of expertise in and of itself.

Chapter 7, the final findings chapter, deals with a concept I call *self-evidencing*. r/paleo and r/nootropics both deal with complex, contested topics. Evidence of high enough quality to push users unambiguously in a particular direction is scarce, and partly as a result of this both communities emphasise the need for users to try things for themselves in order to discover what works for them. The chapter begins with a discussion of how experiential knowledge is used to

provide advice, exploring why users choose to seek and give this kind of advice. From here, I proceed to discuss the justificatory regimes users employ to explain their beliefs and choices. I advance the argument that *pragmatism* is the dominant mode of reasoning: that what is ‘true’ is what works for an individual. This is followed by a discussion of placebo effects. Understanding what is and isn’t a ‘real’ effect of a drug or diet is psychologically important to many users of r/paleo and r/nootropics, who want to ensure that what they are doing is having an effect over and above their belief that it might be efficacious. I then explore practices of *accounting for difference*, extending on Gilbert and Mulkey’s classic work on ‘accounting for error’ (Mulkey and Gilbert, 1982) to show how users justify the success or failure of the same intervention in different instances. The final part of this chapter examines the ubiquity of self-monitoring amongst users of r/paleo and r/nootropics, making the argument that informal self-experimentation is the most common kind of knowledge-making practice, more so than the more quantitative or data-driven ‘self-tracking’ (Neff and Nafus, 2016).

Finally, the Conclusions chapter of this thesis synthesises the contributions it makes to knowledge in three distinct areas. First, I examine the concept of expertise, making the argument that it must be rethought as an attributed status rather than as a competence which one possesses. This rethinking, I argue, better tracks how individuals relate to the concept of expertise, and also has beneficial outcomes for the perception of experts and expertise in democracy. Second, I consider the influence of the affordances of web platforms on discourse, arguing that the concept of *platform dialectics* is a useful one for scholars of digital sociology. Third, I explore the concepts of *aspirational subjectivity* and *epistemic pragmatism* as modes of understanding how individuals relate to authority and knowledge of their bodies and their selves. The last part of this chapter puts these findings in context through discussion of the increasingly pervasive and salient role of the internet in the lives of people across the world.

2. The Paleolithic Diet, Nootropics, and Online Health Communities

In this chapter, I explain the focus of the thesis: an empirically substantiated understanding of the construction, mobilisation, and negotiation of expertise, authority, and credibility within online self-improvement communities of practice. I move through several different literatures of direct relevance to my research sites, bringing into consideration how these interact with my chosen theoretical concepts of authority and expertise. This begins with a discussion of r/paleo and the various literatures of relevance to it, including the ‘nutritionist paradigm’ that supposedly encapsulates the diet (though I make the argument that it does not quite do this). This is followed by a close examination of the social scientific literature on the paleo diet, before I move to discuss r/nootropics, focussing on smart drugs, self-experimentation and body-hacking. The last part of the chapter discusses the similarities between the communities under study and online patient communities.

The politics and discourse of expertise is well-studied in formal arenas, e.g. courts (Brewer, 2006; Cole, 2008; Goldman, 2001), policy-making (Jasanoff, 1994), and scientific discourses (Collins, 2014, 2001; Collins and Evans, 2007, 2002). Similarly, ‘lay’ (Epstein, 1995; Wynne, 1998) or ‘uncredentialed’ (Collins and Evans, 2007) expertise has become an area of concentrated and nuanced debate and research (e.g. Arksey, 1994; Callon, 1999; Hall et al., 2015).

Less attention has been paid in the Science and Technology Studies and Philosophy of Science literatures to ‘communities of practice’ (Lave and Wenger, 1991; Wenger, 1999). This refers to groups in which people engage in a ‘process of collective learning in a shared domain of human endeavour’ (Wenger-Trayner and Wenger-Trayner, 2015). Whilst scientific and other academic communities no doubt fall under this label, they have additional formalised structures of credentialism, authority, and knowledge-making that are not present in some of the more informal groupings best characterised as communities of practice. These more informal groupings include communities dedicated to optimising the functioning of an organisation (Wenger and Snyder, 2000) and patient communities concerned with better understanding a shared illness (Adams, 2011; Armstrong and Powell, 2009; Barbot, 2006; Rabeharisoa and Callon, 2004).

These communities (including online communities) have been studied by medical sociologists (Akrich, 2010; Bar-Lev, 2008; Bruce et al., 2005; Fredriksen et al., 2008; Mo and Coulson, 2010) and are well-analysed particularly with respect to their utilisation of the concept of ‘experiential knowledge’ (Borkman, 1976; Noorani et al., 2019) alongside ‘traditional’ (scientifico-medical) modes of knowledge-making and authority. To the extent that studies of individuals’ assessment of the credibility of internet sources exist, they tend to come from social scientists concerned with media and communication, and to be quite general, looking at our propensity to believe internet sources as a whole rather than focussing on the interactions within and between specific communities (Metzger, 2007; Metzger et al., 2010; Taraborelli, 2008; Wathen and Burkell, 2002).

This thesis therefore contributes to diverse disciplinary and interdisciplinary discussions through the analysis of a subset of communities of practice through an STS lens. These are (a) online communities (Baym, 1999), which differ from physical communities in that their populations are often anonymous, potentially more transient, communicate primarily through text, video, and images, and are geographically dispersed; (b) communities without a traditional or credentialed authority to defer to (a role often taken on by doctors, lawyers, educators, scientists, and so on); and (c) groups where the epistemic project does not rely on a bifurcation of ‘experiential’ knowledge and ‘scientific’ knowledge, but instead amalgamates the two in complex, nuanced, and delicate ways. Examples of communities like this would be the Quantified Self movement (Choe et al., 2014; Lupton, 2016a) and other communities with significant self-tracking components (Lupton, 2014; Neff and Nafus, 2016; Selke, 2016), such as ‘neuro-hacking’ or ‘life-hacking’ communities (Wexler, 2017). They also include communities devoted to particular diets, or ‘ways of eating’ (Gunnarsson and Elam, 2012; Jauho, 2014). For these groups, the epistemic project involves solving problems and accounting for anomalies within a particular dietary paradigm. The STS lens in particular is useful for this purpose in part because it is non-partisan with respect to knowledge claims, taking actors’ worldviews at face value as resources for analysis. Additionally, STS allows the analysis to take into account not only the discourses of actors within these communities, but the way that the technical structure of the platforms on which they operate influence those discourses.

In the rest of the chapter, I will discuss both r/paleo and r/nootropics with extended reference to extant literature focussing both specifically on paleo and nootropics, and on directly related topics. It is worth noting from the beginning that scholarly literature in these areas is relatively limited. Given how prevalent these communities already are, and the likelihood that they only

increase in number as more people gain access to and use the internet for health-related purposes, this thesis should fulfil an important function in elucidating knowledge practices in these communities.

Introducing r/paleo

r/paleo is the first of two communities under study in this thesis. It is devoted to followers of the ‘paleolithic diet’, or ‘paleo’, and its offshoots. Paleo is a diet premised upon the idea of *evolutionary nutrition*: that humans are optimally configured to be healthy when consuming the kinds of foods that were present during the time in which human bodies evolved (Knight, 2008). Paleo gurus (Cordain, 2010; Sisson, 2012; Voegtlin, 1975; Wolf, 2010) make the argument that, compared to the span of human existence which preceded it, humans have not evolved much since the Agricultural Revolution which took place around 10,000 years ago and saw the replacement of many hunter gatherer communities with permanent agrarian settlements. They draw upon anthropological and archaeological evidence to argue that humans are not adapted to consume grains as their main food sources, or indeed many of the foods that constitute the ‘Standard American Diet’. Instead, humans should consume the kinds of foods that hunter gatherers consumed.

In the most literal sense this is impossible: the animals and plants that existed tens of thousands of years ago do not resemble the plants and animals we have access to today. This is one of the critiques levelled at paleo adherents and gurus. More sophisticated frameworks for paleo argue that, rather than literally eating as pre-neolithic humans ate, we should take their consumption patterns as a heuristic for what is *likely* to be health-promoting. ‘Processed’ foods which contain significant quantities of sugar and preservatives are proscribed, as are factory farmed meats which have been raised on grains and pumped full of antibiotics. Instead, paleo practitioners argue that people should consume grass-fed beef that has been raised in open conditions, along with large quantities of vegetables. The timescale along which evolution has occurred or can occur is one object of study and contention within the paleo community. In particular, dairy products are an example of how this kind of controversy plays out, with some earlier paleo works excluding them from the diet, whilst other gurus (notably Mark Sisson) including them in a modified form of paleo called the ‘primal’ diet. The rationalisation for their inclusion is that alleles allowing for the digestion of lactose in adulthood have spread across European and other

populations, and therefore people who are adapted to consume dairy in this way may do so with little concern.

Since paleo's popularisation over the last decade there have been a number of controversies over what kinds of foods are 'allowed' within the scope of the diet. As more gurus have risen to prominence with their own spin on the diet, the boundaries of the community have shifted to include people who eat things that might have previously been proscribed. As such, boundary work (Gieryn, 1983) is a common technique within the community as a means of policing what is 'in' and what is 'out'. In some instances, users' imagination of what would have been eaten in the paleolithic era is used as evidence of what ought to be in the diet. At other times, similarity relations are drawn between different foodstuffs as a way of drawing this line. For example, wholegrain (brown) rice is considered 'worse' than white rice by many paleo dieters, in spite of the fact that it is less 'processed'. This is because white rice has had the bran and germ of the grain removed. According to paleo dieters, this means that brown rice contains phytic acid, which blocks the gut's ability to absorb minerals. In this instance, the question of 'what, precisely, are the chemicals in agricultural foods that are harmful to the body' overrides the question of 'what would paleolithic people have been able to eat'.

r/paleo has around 120,000 subscribers (though the number was closer to 80,000 at the beginning of the project). Members of the community engage in discussions of the theory and application of the diet's principles. They seek advice and ask questions about whether they are on the right track or how to overcome obstacles like cost, or family resistance to their way of eating. They congratulate each other when someone achieves their goals or even progress toward them, and they commiserate over the difficulties they face in pursuing this way of eating. They post images of and stories about themselves to illustrate the changes that have come to their lives as a result of this way of eating. They share their frustrations with the way that media outlets portray them and their lifestyle choices. They compare this way of eating or similar alternatives to the 'Standard American Diet' (which they call the SAD), and they post links to peer-reviewed articles which pertain in some way to paleo, usually containing evidence which supports one or more of the tenets of the diet.

The nutritionist paradigm

In order to better contextualise the paleo diet, as well as primitivist diets more generally, I will first give a brief sketch of the relevant history of nutrition and diet movements. In his book *Nutritionism*, Gyorgy Scrinis argues that the dominant discourse of nutrition over the past half century has been that of ‘distinguishing between ‘good’ and ‘bad’ nutrients’ (Scrinis, 2013). Within this paradigm, the value of food is interpreted through its nutrient composition, rather than *qua* food itself. It is an overtly scientific paradigm which claims that there is a ‘clear-cut ‘right’ answer or scientific truth regarding the health effects of nutrients’ (ibid.: 11). Scrinis argues that this reductivist interpretation includes the ‘decontextualisation, simplification, and exaggeration of the role of nutrients in determining bodily health’. While semi-polemical, this work is useful in illuminating the historico-sociological backdrop of nutritionist movements today. Scrinis terms the current dominant discourse ‘functional nutritionism’, describing it as a paradigm that advocates ‘you enhance your health and target particular bodily functions and processes. To achieve this enhanced state of health and bodily functioning, we must keep up with the latest nutritional research and expert advice if we are to identify the whole foods or processed ‘functional foods’ that deliver the desired health benefits’ (ibid.). Scrinis argues that paleo, as well as LCHF diets, still falls into the nutritionist paradigm insofar as it invokes arguments from the nutritional profile of particular foods in order to supplement or justify its central tenets of biological and genetic determinism (ibid.: 158-159).

In spite of an increasingly sophisticated understanding of the relationship between food, nutrients, and the body, many nutrition experts tend to represent food as an undifferentiated mass of calories and the body as something of a ‘black box’ (ibid.: 100). A good example comes in the mantra, ‘Calories in, Calories Out’ (CICO). CICO tells dieters that they will lose weight if and only if they burn more calories than they consume. But, as one of my interviewees put it, ‘On paper [CICO is] a rock-solid plan. So is telling someone with financial problems to simply spend less or a student with bad grades to study more. There is likely more to the story.’ The low-carb movement, as well as paleo, react against this calorie-centric view and emphasise the non-uniformity of calories. Staples of this movement include Gay Taubes’ *Good Calories, Bad Calories* (2008) and Dr Atkins’ works (2003, 1981). I, however, argue that Scrinis is not wholly correct that low-carb and paleo entirely adhere to the reductivism of nutritionism. Many adherents in r/paleo attempt to classify foods based on their quality, rather than their specific nutritional composition. They concern themselves with the quality of meat, emphasising the

importance of 'grass-fed beef' and disdaining 'factory farmed animals' (Frazier, 2013). A common refrain in r/paleo is 'eat *real food*, and the weight will come off' (emphasis added).

Paleo diets, though not intrinsically low-carb, are closely linked with low-carb diets like the Atkins Diet (Atkins, 1981), South Beach Diet (Agatston, 2003), and ketogenic diet (Arcita, n.d.). Their unifying characteristics are an opposition to mainstream nutritional advice and medical consensus, propagating the idea that fats can be healthy, complex carbohydrates may not be the foundation of a healthy diet, and that 'Western' diets exemplified by a homogenised idea of the 'Standard American Diet' (SAD) are unhealthy (Bentley, 2004; Knight, 2012a, 2012b). These are the latest in a long line of anti-mainstream or 'alternative' ways of eating, such as the Banting diet (Mouton, 2001) in Victorian Britain (which one of my interviewees informed me has enjoyed renewed popularity in South Africa in the 2010s due to its revival by a scientist named Tim Noakes at the University of Cape Town (Noakes et al., 2015)). This contextualisation is crucial to understanding paleo, which shares with these ways of eating a critical approach to 'traditional' authorities such as doctors and state guidelines. Similar can be said for nootropics users, though the precise nuances of these relationships will be teased out later in this thesis. Because in many instances this critical approach necessitates contradicting contemporary scientific consensus on nutrition, paleo practitioners (and nootropics users) find other ways of constructing and challenging claims to authority, though notably the language and ideology of science still figure significantly within their discourses.

It is also worth noting here that there are significant debates over the proper place of both fat and sugar in the diet. The diet-heart hypothesis, which links fat consumption to cardiovascular disease through the medium of its purported effects on serum cholesterol levels, has remained both popular and controversial amongst medical practitioners since the first half of the twentieth century (Weinberg, 2004). Official guidelines in the USA still recommend a low intake of saturated fats in particular, recommend consuming less than 10% of calories per day from saturated fats (U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2015). In contrast, adherents to paleo and similar diets reject the idea that fats (including saturated fats) are harmful, arguing that there is an insufficient evidentiary basis to support this hypothesis. Instead, they make the argument that the increase in cardiovascular disease in the USA and elsewhere is likely due to an increased intake of (among other things) sugar. Sugar has recently come in for increased scrutiny amongst not only paleo adherents but in mainstream nutritional discourse, with, for example, taxes being implemented on beverages with

high sugar content in some countries (Arthur, 2018; HM Treasury, 2018; Parle, 2018). These discussions, as noted by Scrinis, tend to be framed around the merits and ills of particular nutrients. This is more true of mainstream discourse than of discussions in specialised communities such as r/paleo, but the nutritionist paradigm is still influential in the latter.

This, then, is the state of play in contemporary nutrition science and discourses: a nutritionist paradigm that is present but not entirely hegemonic, and an increasing pushback against this paradigm from authors including Scrinis himself, who emphasise ‘whole’ or ‘real’ foods, rather than necessarily reducing them to their constituent nutrients. Moreover, there is what some might term an ‘anti-authoritarian’ bent to their approach, with significant distrust in traditional modes of nutritional authority and a deference instead to ‘gurus’⁶ and increasing emphasis on *n=1* experiments.

What is paleo?

The Paleo Diet, or ‘paleo’, is a diet, lifestyle, and ideology based around the idea that ‘the human body is not adapted to civilisation ... [and the practice of rejecting] modern ways of eating for foods that could have been hunted or gathered in the Paleolithic Era’ (Johnson, 2015). It has its roots in the book, ‘The Stone Age Diet’ (Voegtlin, 1975), with the first text using the term ‘Paleo Diet’ appearing in the early 2000s (Cordain, 2010). In the mid-2010s there were an estimated 3 million Americans on some form of paleo diet (Johnson, 2015), and a large number of websites, blogs, Instagram profiles, and other places which propagate it (including r/paleo).

The founding myth of paleo is aptly summated by the FAQ section of r/paleo:

Q: Why should we care about the Paleolithic Era today?

A: To put it simply: the Paleolithic Era is what formed our species. Evolution is a slow process. Our species had a leisurely 2-3 million years to adapt to our environmental niche. The invention of agriculture, only 10-15,000 years ago, was a very sudden and dramatic shift in diet and environment

⁶ I use this term as an actor category. People within the paleo community refer to figures like Mark Sisson and Robb Wolf as ‘gurus’. Usually this connotes a high level of experience with the paleo diet, knowledge of its evidentiary backing, and some kind of personal connection with the diet, such as having used it to overcome their own health issues.

for many human cultures. Foods like cereal grains (wheat, rice, barley), legumes (beans, peanuts) and dairy not only appeared, but became dietary staples, when earlier they would have been rare-to-nonexistent. The primary idea behind the paleo diet is that humans, as a species, have not yet evolved to be able to handle these foods well.

The logic bears a strong resemblance to those described by Christine Knight in her paper on evolutionary explanations for obesity in the low-carb diet movement (Knight, 2011). She explains that low-carb diet books:

[P]resent two distinct neo-Darwinian explanations of health and body-weight. First, *evolutionary nutrition* is based on the premise that the human body has adapted to function best on the diet eaten in the Paleolithic Era. Second, the *thrifty gene theory* suggests that feast-or-famine conditions during human evolutionary development naturally selected for people who could store excess energy as body fat for later use. (ibid.)

She argues that these two strands of argumentation, *evolutionary nutrition* and the *thrifty gene theory* play into an overarching argument of *nutritional primitivism* (Knight, 2008). This draws on existing conceptions of ‘primitivism’ (Adams, 1998; Bell, 1972) defined as ‘the pursuit of ostensibly simpler, more natural and authentic ways of eating as part of a quest for health through diet’ (Knight, 2015). This yearning for a utopian way of living sometimes plays out in the way that individuals and communities following diets like paleo relate to evidence and claims to authority and expertise, driving them towards ‘just-so’ stories (Wright et al., 2005). It is exemplified by Mark Sisson’s adage, ‘What Would Grok Do?’ which asks paleo dieters pondering their lifestyle choices to consider the actions of a fictional paleolithic man (and his fictional paleolithic wife, though Grok is centred in most of the text).

Contrary to both Knight and other analysts of primitivist dieters, my thesis argues that many paleo dieters place significant limits on the extent to which primitivism influences their lives. The implications of this with respect to users’ interactions with one another are drawn out in Chapter 6. Knight’s work on evolutionary nutrition utilises a discourse analysis of bestselling low-carb diet books up until the mid-late 2000s (Agatston, 2003; Cordain, 2001; Eades and Eades, 1996; Sears, 1995; Steward et al., 1998). At this time, gurus like Barry Sears (1995) were arguing that human evolutionary adaptation was ‘essentially complete well before the Paleolithic Era’ (Knight, 2011: 3). In contrast, contemporary popular books by paleo gurus are more flexible in their

approach to evolutionary nutrition. Robb Wolf, author of *The Paleo Solution*, is highly regarded amongst my interviewees and the denizens of r/paleo. His latest book *Wired to Eat* (Wolf, 2017) begins with a chapter entitled ‘Beyond Paleo’ (ibid.: ix) which lays out multiple issues with the formulation of paleo popularised by the subjects of Knight’s work. ‘Both academics and the media loved to portray the Paleo diet as some kind of historical re-enactment, poking fun at the ‘caveman’ motif, which became inseparable from the Paleo diet idea,’ he argues, in tune with many of the more common complaints I encountered on r/paleo about the treatment their way of eating was given in the media (ibid.: xi). ‘Perhaps even more frustrating,’ he continues:

was the tendency for people who actually followed the Paleo diet to turn the general concepts into quasi-religious doctrine. Those newly converted to Paleo tended to be quite dogmatic in the insistence that this was “the one true way” to eat. ... The reality is, some of the people might have had success on a low-carb version of Paleo and never considered that other people, and even they themselves, might benefit from a higher-carb version. ... The Ancestral Health or Paleo diet model I talked about in my first book is incredibly powerful, but these concepts are tools and starting points, not final destinations. As you’ll soon learn, one size does not fit all, and that has never been more evident than now with the newest research on Personalised Nutrition (ibid.: xi-xii).

The shift from a prescriptive or deterministic approach, such as Loren Cordain’s ‘Lose Weight and Get Healthy by Eating the Foods You Were Designed to Eat’ (2001), to this flexible framework emphasising individual variability is extremely significant. It is echoed in the words of many r/paleo users and interviewees. JS, an r/paleo moderator, told me that one of the only rules they have to regularly enforce is the prohibition on proselytising your diet as the ‘One True Paleo’. Likewise, moderator JR told me that new ‘converts’ can ‘get very excited very quickly and can get dogmatic’. I discuss this shift in depth in Chapter 6.

r/paleo users also occasionally satirise what they perceive as the excesses of paleo gurus and more extreme adherents. As a brief example, I present a highly upvoted satirical thread from 2014, entitled ‘I ate a non-paleo food and I’m sick upvotes pls’.

RYU 605 points

‘Just a friendly reminder that this lovely forum should not be used as a red pill circle jerk on how bad non-paleo food is and how it gave you food poisoning and made you sick for a week. A lot of people like myself can only eat ‘80%’ paleo aka we don’t have the resources/our situation does not allow us to be able to go full paleo. It’s really stupid to see posts about this when they are mostly based on

placebos aka 'If I eat this food it will be bad cause it's not paleo.' It's not true, some people are sensitive to certain things like gluten sure, but you should already know not to eat those kinds of foods in the first place. So please stop the circle jerking. Eating or treating to yourself to non-paleo food once in a while is PERFECTLY OK and should not be shamed in this community.'

SHG 184 points

I ran around on all fours and climbed a tree today because that's what grok would do.

[deleted] 72 points

I spent 3 days tracking and hunting a mammoth for protein. Guess I'm more paleo than you.

MNF 56 points

I made a wheel today.

QDM 46 points

The wheel is a modern invention. Totally not paleo.

MCD 22 points

The wheel is used to grind grains. I would rather send my children up against a saber-toothed cat with a spear made of willow than subject them to its influence.

The thread combines the playful nature of many reddit communities (Massanari, 2013) with an approach to paleo that demonstrates a disdain for more extreme or rigid conceptions of what it means to adhere to the diet. There is also a bitterness towards behaviour that performs 'boundary work' (Gieryn, 1983) in defining 'being paleo' as strictly as possible whilst making more loose or casual adherents feel unwelcome.

Understanding the rationale for this change in rhetoric from the 2000s, as well as what it can tell us about modes of authority in both paleo and self-improvement communities more generally, is an important part of my argument, which I explore primarily in Chapter 6. The change creates significant problems from the standpoint of 'selling' paleo to newcomers, and I also examine how individuals within the community attempt to reconcile a diet that fundamentally emphasises individualism and self-experimentation with the prescriptive requirements that diet puts upon its new acolytes.

'Smart drugs', nootropics, and /r/nootropics

The second community under study is r/nootropics, which is devoted to discussion of drugs and supplements called 'nootropics', as well as 'cognitive enhancement' more broadly. Both r/paleo

and r/nootropics can be considered broadly under the heading of ‘self-improvement’ communities, in that they are designed to facilitate individuals making different lifestyle choices which enable them to meet various goals.⁷ r/nootropics explicitly focusses on building up a corpus of research and advice on how various drugs and supplements can be used as a means of altering (and ideally ‘improving’) cognition. A detailed exposition follows below. The essential features of ‘nootropics’ are that the term emerged in the 1970s to describe a new class of substances which significantly improved various facets of cognition, such as working memory and executive function, without significant associated short- or long-term side effects. The term was coined to describe the newly synthesised drug piracetam, but in many ways it describes *putative* substances. That is, there are very few extant substances which meet the strict definition of ‘nootropics’, and so r/nootropics and similar communities are in part a search for substances (or the combinations of substances and dosages) which will facilitate long-term cognitive enhancement with no deleterious effects.

r/nootropics has over 170,000 subscribers (though it had closer to 120,000 for most of the project). Members consume a variety of substances, ranging from well-tested combinations like caffeine and L-theanine (the active ingredient in green tea), to off-label prescription drugs like modafinil and Adderall, to research chemicals referred to only by a combination of letters and numbers. Members of the community post their experiences with particular substances; they ask for advice on what kind of substances go well together (referred to as a ‘stack’); they post and discuss peer-reviewed evidence for the safety and efficacy of substances they commonly use; they suggest new substances that might be worth trying; they discuss appropriate dosing schedules; they seek reputable vendors for their supplements; and they post their experiences (good or bad) with specific vendors.

r/nootropics is one of the largest forums of its kind on the internet. There are very few physical shops which sell nootropics, and the industry is relatively unregulated. Most nootropics vendors sell substances without making any medical claims about them, because they have not been

⁷ ‘Self-improvement’ is used by some researchers to refer to and critique the ‘self-help’ industry constructed under neo-liberalism. This industry is said to encourage people to seek personal solutions to structural problems, as well as to subjugate themselves to the logic of the market and attempt to maximise their ‘productivity’ as a unit of labour in order to succeed in a meritocratic system. Whilst these critiques have much of value to contribute, I use the term ‘self-improvement’ to refer to these communities without attempting to engage in such issues. Instead, the term refers to the main characteristic these communities have in common.

subject to sufficient clinical trials. This means that vendors seek to be seen and reviewed positively by members of r/nootropics, and one of the significant issues on the forum is preventing vendors and other interested parties from tampering with reviews (for example, by anonymously posting positive reviews of their own products or negative reviews of rivals).

The field of nootropics consists of a number of different kinds of drugs. Some users are interested in using recreational drugs for purposes other than recreation, for example microdosings LSD or MDMA in order to boost creativity or using ketamine as a treatment for depression. Others, usually college students, want drugs that will help them improve their productivity by diminishing their tendency to procrastinate, improving their focus, and improving working memory. Often these users take modafinil, Adderall, Ritalin, and similar prescription drugs. There are some negative perceptions of this kind of user from others who consider them to be using drugs irresponsibly and potentially getting themselves and others into trouble through physical or reputational harm. The third group of drugs are relatively untested substances, which more experienced users often self-experiment with in order to establish and benefit from their effects. These include noopept and various substances usually identified with numbers and letters. Some more adventurous users might also experiment with ‘research chemicals’, untested substances which often seek to emulate the effects of illegal drugs. These users, again, are subject to criticism and are more likely to be found in subreddits such as r/ResearchChemicals. Finally, there are relatively well-tested drugs and supplements that many users consume for effects which are well-documented in the community. For example, caffeine pills are combined (‘stacked’) with L-theanine, in order to provide a combination effect of alertness and calm. There are tensions both within and between various groups due to the wide variety of drugs being consumed and the purposes for which they are being taken. Law enforcement crackdowns and FDA regulation are perennial concerns. The subreddit also hosts and summarises a large amount of research into most of these substances, with the aim of producing accurate and reliable information on the effects and safety of nootropics and cognitive enhancers.

The scope of cognitive enhancement

Before examining nootropics specifically, it is useful to have an overview of what people mean when they talk about ‘cognitive enhancement’. Cognitive enhancement is defined in

⁸ Taking a substance at a dose too small to produce noticeable psychoactive effects.

neuropharmacological literature as ‘the use of drugs and/or other means with the aim to improve the cognitive functions of healthy subjects, in particular memory, attention, creativity, and intelligence in the absence of any medical indication’ (Frati et al., 2015). Similar concepts have existed since at least the 1840s, where there was an ‘unprecedented explosion of interest in the workings and meanings of the nervous system’ exemplified by the popularity of mesmerism, which propagated the idea that practitioners could manipulate a powerful invisible force possessed by all living beings in order to heal them (Murison, 2012). The specific term ‘nootropic’ appears to have been coined in 1972 by Romanian scientist Corneliu Giurgea (Giurgea, 1972). Giurgea had recently synthesised the drug piracetam (Margineanu, 2011) belonging to the racetam family which now make up a significant proportion of the substances used by members of r/nootropics and other nootropics communities. Giurgea originally defined the drugs as having the essential characteristics of piracetam, namely: (i) to directly activate the integrative activities of the brain, having a positive effect on the mind, (ii) the activation being selective for the cerebrum and not manifesting on lower brain levels, so that (iii) the activation exerts a restorative effect upon disturbances of higher brain functions (Giurgea, 1972, as cited in Margineanu, 2011). In review publications attempting to popularise the concept, Giurgea expanded upon his conception of nootropics:

A nootropic drug should: (i) enhance learning and memory, (ii) increase the resistance of learned behaviours/memories to conditions that tend to disrupt them (such as electroconvulsive shock and hypoxia), (iii) protect the brain against various physical or chemical injuries (e.g. barbiturates, scopolamine), (iv) increase the efficacy of the tonic control mechanisms of the cortex on the subcortical levels of the brain, and (v) lack the usual pharmacology of other psychotropic drugs (e.g. sedation, motor stimulation) and possess very few side effects and extremely low toxicity. (C. Giurgea, 1980, 1980, as cited in Margineanu, 2011: 36)

It is this definition that the strictest devotees of nootropics use as their guiding light. As Margineanu notes, under this definition ‘any nootropic ... would be a cognitive enhancer, but the opposite is not true: only a cognitive enhancer that has neuroprotective effect and is devoid of toxicity would justify the label nootropic’. However, many use the terms ‘cognitive enhancers’ and ‘smart drugs’ interchangeably with ‘nootropics’, and this is a source of controversy within r/nootropics (which labels itself ‘a reddit devoted to discussing nootropics and cognitive enhancers’) where doing boundary work (Gieryn, 1983) around what is and is not a nootropic is a useful means of garnering or denying authority.

When nootropics and cognitive enhancement are discussed outside of communities dedicated to them – for example in mainstream media outlets - there are two dominant narratives. The first is more recent and concerns the ‘microdosing’ of LSD and other psychedelic substances. Microdosing became popularised during the 2010s by high-profile articles exploring the continuous use (particularly in Silicon Valley) of small amounts of the drug to achieve effects that are more in line with cognitive enhancement than psychedelic experiences (Soln, 2016). Posts about the use of LSD, MDMA, magic mushrooms, and other illicit psychedelics as a means of achieving cognitive enhancement are popular on r/nootropics, with 27 out of 500 analysed posts containing some mention of microdosing, 48 containing mention of LSD, MDMA, or magic mushrooms, and many of these posts being highly upvoted and commented upon. These are typically some of the least controversial drugs in the nootropics canon. Their effects at ‘therapeutic’ doses are well-documented and obvious. Consequently, the somatic experience of the individual substitutes for any external authority or expert on whether the drugs do what they say they ought to. There are two areas of potential issues, then, to evaluate: first, *trust* in vendors of these drugs. Because they are illicit, there are no advertisements on r/nootropics, and advice on how to find a good vendor (who will reliably supply pure drugs, discretely, at good prices) is relatively sparse compared to (now defunct) subreddits like r/darknetmarkets. Consequently, trust in vendors of illicit substances is not analysed in this thesis. The second potential issue comes in the discourses of microdosing specifically: given that individuals are taking substances in ways and doses that are not as thoroughly tested, the exact effects of this consumption are not well-defined when compared to the psychoactive doses more typically taken by recreational drug users. Thus, what constitutes the correct regime for microdosing, and who to trust to tell you this, is up for debate.

The second common narrative around nootropics is that of students using ‘smart drugs’, usually modafinil, methylphenidate (Ritalin), or amphetamine (Adderall), in order to improve their grades. A *Nature* article from 2008 on the subject begins:

Today, on university campuses around the world, students are striking deals to buy and sell prescription drugs such as Adderall and Ritalin – not to get high, but to get higher grades, to provide an edge over their fellow students or to increase in some measurable way their capacity for learning. (Greely et al., 2008)

More recently, the Netflix documentary *Take Your Pills* (Klayman, 2018) explored the scope of prescription stimulant use in the USA, focussing partly on ADHD diagnosis and partly on off-label or illegal use by individuals in colleges and on Wall Street (Gleiberman, 2018). This is also an area of major concern in academic philosophy, ethics, and drug studies, with many papers dealing with the ethics of ‘enhancement’ and the ‘misuse’ of cognitive enhancement drugs (Cacic, 2009; Deline et al., 2014; Eickenhorst et al., 2012; Farah et al., 2004; Franke et al., 2012; Harris, 2011; Langlitz, 2010; Larriviere et al., 2009; Partridge et al., 2011; Racine and Forlini, 2010).

The movie and later series *Limitless* (Burger, 2011; Sweeny, 2015) is at least in part responsible for an increase in the numbers of young people attempting cognitive enhancement. The show revolves around NZT-48, a drug that grants the user superhuman cognitive powers, ostensibly through tapping into the unrealised potential of the brain.

Your brain is a miracle. But it's not efficient. There's a maze inside of everyone's head, a labyrinth of missed connections and untapped potential. But now, suddenly, I had access to every single brain cell. - *Brian Finch, Limitless (2015)*

Limitless has had a significant influence on the cultural imagination and discourse around nootropics and cognitive enhancement. A Google search for ‘NZT-48’ conducted on a clean research browser⁹ (Rogers, 2010) demonstrates the influence of this film on the cognitive enhancement market. The first two results are articles asking ‘Does an NZT-48 Limitless Pill Exist?’, both of which attempt to sell readers proprietary nootropics (Krebs, 2018; lucid, 2016), and two other results from the first page are articles describing the author’s personal experiences with modafinil. One of these latter articles describes it as the ‘real ‘limitless pill’” aka NZT-48, and the author attests they ‘almost became Marvel’s Flash’. This hyperbolic description is a trope in r/nootropics, where users are prone to respond to breathless personal anecdote posts describing the incredible effects (often called ‘god mode’¹⁰) by asking whether they are certain that they are not having a manic episode. Indeed, such posts are common enough that

⁹ This is a browser with all identifying information removed, and all tracking options disabled. The overall effect is to ensure that the researcher’s browsing history and data do not alter the results of the search.

¹⁰ A term derived from video games, where ‘god mode’ affords the player invulnerability and almost unlimited power.

r/nootropics moderators created significant controversy by creating a sister subreddit, r/afinil, specifically for posts pertaining to the drug. They argued at length that modafinil experience posts do not contribute to, and indeed actively degrade, the quality of discussion in the community. In response to one user asking for modafinil posts to be allowed once again in a post that became the top-upvoted on the subreddit that week, long-time moderator MYSD said:

MYSD 51 points

We've never disallowed all modafinil posts. We've always said if there were new or interesting discussions regarding modafinil, or its mechanisms, that we would allow them. People have messaged us when they thought their post would lead to good discussion, and we have approved some over the years. However, what you don't have to see is all the BS that tries to get posted that we filter out. If we were to remove the filters altogether, it would be a shitshow here. The reality of the matter is that most of the posts regarding modafinil are low quality or spam. This is why you don't see an increase in quality on r/afinil. People are just not posting quality stuff.

As is pointed out in response, the fact that this post is highly upvoted indicates that there is significant discontent with what is perceived as a ban upon posts about modafinil. Whether this reflects a widespread interest in (and potential use of) modafinil by users of the subreddit is unclear, but the sheer quantity of posts of this kind indicates that some significant proportion of r/nootropics users are the kind of nootropics user who is at least interested in non-medical stimulant use. With that said, the effects of stimulants are generally understood to be profound enough that not much discussion is warranted: as with psychedelics, an individual's somatic experience takes priority as the means of understanding the action of the drug. Few arguments in r/nootropics centre around what the effects of modafinil, Ritalin, or Adderall, are or should be in the abstract, though users do discuss what these effects do for them specifically. There is relatively little at stake in these debates for members of the community.

Thus far, I have sketched the motivations and characteristics of two sets of nootropics users. There is a third group of users whose practices, behaviours and values are subject to far less analysis in either the media or academia, and these users are arguably the core active constituents of r/nootropics. These users typically experiment with a set of drugs that are less potent than those outlined above, and that can be further defined into two groups: naturally occurring substances (which may be consumed in raw or processed form) such as caffeine, L-theanine, bacopa monieri, lion's mane, and ashwagandha; and synthetic drugs including the racetam family

and noopept. While some may use stimulants or microdose LSD, many do not and actively denigrate those who do, considering them to be ‘chasing the dragon’¹¹ in a socially acceptable way. They are more likely to have a more restrictive conception of what a nootropic *is*, often defining it as something that either has a subtle effect, or which has no side-effect profile or issues with sustainability. Some go so far as to define nootropics by specific mechanisms of action (usually on the GABA system). Of all the users of r/nootropics, they adhere most closely to the original formulation of what a nootropic might be.

It is difficult to tell what the relative proportions of these different groups might be, but analyses conducted by community members can provide some illumination. An r/nootropics user performed a text analysis of comments up to 2017 in r/Nootropics and r/StackAdvice, a sister subreddit designated as the location for questions about personalised nootropic regimes. Figure 1 below indicates that caffeine is the most talked-about by a significant margin, followed by piracetam (the ‘original’ nootropic, synthesised in 1964 by a team led by Giurgea (Margineanu, 2011)). Modafinil and Phenibut (another drug with quite pronounced effects that became so popular the r/nootropics moderators made a sister subreddit for it) rank third and fourth, indicating the enduring popularity of substances with significant experienced effects. These are followed by a number of substances that are popular with the subreddit’s community but which do not tend to get as much mainstream press: L-theanine, magnesium, GABA (sometimes taken directly, other times the target system for nootropics), Semax (a popular Russian nootropic), multiple racetams, melatonin, ashwagandha, creatine, and tyrosine all have over 5000 total mentions. Adderall has 9266, rendering it the second most popular of the stimulants (likely coming under modafinil due to its relatively extreme effects and side-effect profile, and the comparative difficulty of procuring it), over and above methylphenidate (Ritalin) which is likely less popular due to its comparatively lower prescription rate for ADHD in the USA (r/nootropics’ primary demographic) than Adderall. The conclusion of this analysis, then, is that the most popular subgroups seem to be (a) those interested in stimulants, and (b) those interested in both natural and synthetic nootropics. Illicit drugs appear less popular as a subject of discussion, with one possible explanation for this being that r/drugs and other subreddits cover these substances from most angles, with r/nootropics serving only those who wish to use them for the specific purpose of cognitive enhancement.

¹¹ A term derived from drug culture, initially used to refer to a particular way of consuming heroin, now used primarily to refer to drug users looking for their next high.

Additionally, there are three surveys of the r/nootropics population, from 2014, 2016, and 2017 (Alexander, 2016, 2014; darktka, 2017). The first (which also included users of Longecity, another popular nootropics community) was n=150, the second n=850, the third n=380. They demonstrate the epistemic bent of community participants, with Scott Alexander (a popular blogger who writes at *Slate Star Codex*) justifying the need for collating the experiences of nootropics users on the basis that their use

tend[s] to ‘outpace’ the scientific literature, using some substances that haven’t yet been shown to work, or haven’t been shown to benefit healthy individuals. Information travels mostly through word of mouth, and people combine a bewildering variety of chemicals without being sure which ones work better than others or even whether any of them work at all. (Alexander, 2014)

Both Alexander and darktka are primarily concerned with user experiences of nootropics, and do not stratify these by demographic factors (an ontological and epistemological flattening which is sociologically interesting in and of itself). However, they also collected demographic data which suggests that r/nootropics is over 90% male (compared with a 70/30 reddit average (bburky, 2014)) and at least 45% US-based. This should be taken with some margin of error for both sample size and sampling bias, which will tend towards those who are more actively engaged in the community. Mental health conditions and neurodivergence are also common, with around 18% of users reporting a medical diagnosis for each of ADHD, depression, and anxiety in the 2016 cohort.

Nootropic Discussion by Supplement ✕

Suppliment	/r/StackAdvice	/r/Nootropics
Caffeine 36875 Total Mentions	8007	28868
Piracetam 30275 Total Mentions	5567	24708
Modafinil 19960 Total Mentions	4247	15713
Phenibut 16131 Total Mentions	2824	13307
L-Theanine 14593 Total Mentions	4557	10036
Magnesium 12361 Total Mentions	2920	9441
GABA 11350 Total Mentions	1249	10101
Nicotine 10057 Total Mentions	954	9103
Semax 9511 Total Mentions	1221	8290
Adderall 9266 Total Mentions	1818	7448
Aniracetam 8890 Total Mentions	2293	6597
Melatonin 8033 Total Mentions	1774	6259
Phenylpiracetam 6561 Total Mentions	1670	4891
Ashwagandha 5684 Total Mentions	1953	3731
Creatine 5527 Total Mentions	1444	4083
Tyrosine 5249 Total Mentions	1518	3731
Adrafinil 4621 Total Mentions	1537	3084
Uridine 4312 Total Mentions	935	3377
Curcumin 3929 Total Mentions	604	3325
Oxiracetam 3860 Total Mentions	1154	2706
5-HTP 3824 Total Mentions	1036	2788
Selank 3073 Total Mentions	368	2705
Kava 3047 Total Mentions	576	2471
Pramiracetam 2732 Total Mentions	752	1980
Methylphenidate 2409 Total Mentions	403	2006
Sulbutiamine 2285 Total Mentions	705	1580
NSI-189 2268 Total Mentions	138	2130
Selegiline 2227 Total Mentions	221	2006
Ginseng 2156 Total Mentions	536	1620
Alpha-GPC 2137 Total Mentions	816	1321

Figure 1 - Table of Nootropics ranked by number of mentions in Reddit comments

There are two papers of specific relevance to this thesis that analyse r/nootropics from a social scientific standpoint. The first is an undergraduate STS dissertation (Squier, 2013) which maps ethical issues and the infrastructures r/nootropics users have built around the ‘research, manufacture, distribution, and governance of pharmaceuticals and medical information’ (p5). The community had 26,000 subscribers at the time, compared to around 150,000 today. The paper focusses on the process by which one ‘becomes a nootropics user’, taking its cue from Howard Becker’s paper *Becoming a Maribuana User* (Becker, 1953) to describe the ‘modes of social learning’ whereby individuals become ‘users’. It is a useful characterisation of some facets of the community, demonstrating the resilience of particular modes of discourse (particularly those with a scientific angle), but gives only a superficial treatment of epistemic questions around how and why users grant credence to particular ideas or sources, choosing instead to fit users’ experiences into this particular ‘becoming’ mould.

Second, Alex Halavais uses r/nootropics as an example in a paper on ‘Home-made big data’ which explores ‘how those who are interested in areas of lifehacking and self-improvement are making their own arguments when discussing these issues with peers’ (Halavais, 2013). In the section below, I analyse the literature on ‘Quantified self’ and self-experimentation, but here I want to look specifically at what we can glean about r/nootropics. He gives us the concept of ‘YMMV’, or ‘your mileage may vary’, which is commonly used to indicate the limits of an individual’s experience in terms of its generalisability. I explore this concept and its applications in greater depth when I discuss ‘hedging’ in Chapters 6 and 7, demonstrating how hedging is not only a feature of the discourse, but through its use by experienced and well-regarded users becomes in and of itself a marker of expertise. He notes that there is a consensus on r/Nootropics that ‘there are significant differences among individual reactions to various forms of cognitive enhancer’ and that the widespread nature of personalisation discourses indicates ‘a reflection of the underlying expectations concerning generalisability’. Further, he outlines the requests individuals make that others back up their claims with citations; the use of citations as a discursive tool is explored in Chapter 6. There is some exploration of the methods by which users gather and disseminate data, including how ‘self-experiments’ shared anecdotally ‘help to form tacit knowledge within the community’, using the example of the popular stack of caffeine and L-theanine as a ‘safe and effective way of increasing mood and alertness’. He notes that ‘this is not particularly news in the scientific community (e.g. Haskell et al., 2008; Kelly et al., 2008), but those on r/nootropics seem to be adopting it based largely on the subjective self-reports of other members of the community,’ continuing, ‘They additionally make practical decisions

regarding the availability and quality of the compounds, the appropriate doses, and the best ways of administering them, apparently based largely on these self-reports.’ This latter claim is explored in depth in Chapter 7. Finally, he analyses the interest that r/nootropics has in the ‘trappings’ of science, documenting the FAQ which ‘provides references for doing reliable ‘n of 1’ research’, the upvote button’s label of ‘solid science!’, the ‘uneasy relationship to institutionalised medicine’ and the ‘[complex] construction of expertise’ wherein individuals ‘stake their claims not on who they are, but on the experiences that have had, or draw in outside experts either from the scholarly literature or from those who are respected by the community’. See Chapter 5 for analysis of how the upvote button, FAQ, and other design features shape and are shaped by discourse; Chapter 6 for my exploration of distrust of institutionalised medicine, and the use of scientific language and ideas; and the majority of this thesis for a more detailed analysis of the complex construction of expertise on Reddit.

Self-experimentation, and body-hacking communities

A further area of literature utilised in and contributing to this thesis is concerned with ‘Quantified Self’, ‘body-hacking’, ‘neuro-hacking’, ‘n of 1’, ‘self-experimentation’, ‘self-tracking’, and likely a number of other terms peculiar to given communities. The concepts they describe are commonly invoked in both r/nootropics and r/paleo, with users engaging in self-experimentation as a means of producing and validating evidence and knowledge. Chapter 7 discusses in depth how exactly users do this.

Self-experimentation, or ‘auto-experimentation’ (Altman, 1972), has a long history in scientific communities, including the lionisation of those (e.g. Marie Curie, Barry Marshall) who have made significant discoveries whilst often putting their own health at risk (Eknoyan, 1999; Karkar et al., 2016; Kerridge, 2003; Weisse, 2012). The Quantified Selfers and self-trackers of today might recognise themselves in this description of an early self-experimenter: ‘For 30 years in the late 16th century, Sanctorius of Padua weighed himself before and after meals, weighed all the foods he ate, and weighed his excrements, and then attempted to account for the differences in weight’ (Neuringer, 1981). Self-experimentation may be more or less systematic; it may be conducted on one’s own impetus or at the prompting of others; and it may be conducted alone or formalised into an ‘n-of-1 trial’ (Kravitz et al., 2008). In 2008, Kravitz et al in *Milbank Quarterly* bewail the supposed decline of such formalised trials in the early 21st century, arguing they offer ‘a unique opportunity to individualise clinical care and enrich clinical research’. Their definition

of ‘n-of-1’ obviously excludes all those who perform them alone or outwith the auspices of the medical or research professions, but is understandable given that much of the academic literature exploring n-of-1 and self-experimentation has (until recently) focussed almost exclusively upon medical contexts (e.g. Guyatt et al., 1990; Jaeschke et al., 1991; Lillie et al., 2011; Mcquay et al., 1994; Notcutt et al., 2004; Roberts, 2010; Tate et al., 2008). These contexts differ from the ‘everyday’ uses of self-experimentation, which are not necessarily being directed at the amelioration of a particular condition, nor being conducted under the auspices of medical authorities. Today, though, the web contains a litany of articles explaining ‘how to self-experiment’, some of which (in an area of overlap between my two communities) have been written by Paleo gurus and practitioners (Masterjohn, 2011; Roberts, 2011; Sisson, 2011). There are also accounts of mass self-experimentation (Oberhaus, 2017), and r/nootropics has attempted to collate the individual practices of its members on multiple occasions in order to create a kind of ‘home-made big data’. However, there is a recognition amongst members that the data they can collect is unlikely to be of a quality high enough to pass scientific standards of rigour and robustness (Alexander, 2016, 2014; darktka, 2017; Halavais, 2013). Self-experimentation comes in a multitude of forms, and there are communities dedicated to nearly all of them on the internet. With that said, they are still somewhat in their infancy as epistemic sources: as Wexler (2017) notes:

When it comes to data analysis, [self-trackers] struggle with the same issues as home users of brain stimulation: namely, the methodological limitations of a sample size of one. To date, self-trackers have not published aggregated data on their experiments in a peer-reviewed journal. (Wexler, 2017)

A recent article by Crawford et al takes the ‘recent proliferation of wearable self-tracking devices intended to regulate and measure the body’ as a cue to examine the last hundred years of ‘self-tracking’ practices, making visible the ubiquitous weighing scales as a means by which individuals both track and hold themselves accountable (Crawford et al., 2015). Moreover, people have apparently? been tracking and documenting their lives in ways that are qualified rather than quantified since humans have had the capacity to create permanent marks on surfaces (Humphreys, 2018). Whilst self-tracking practices are as varied as people themselves, though, the academic literature (and popular imagination) has primarily been cornered by two terms: ‘self-tracking’ and the ‘Quantified Self’ (Lupton, 2016a; Neff and Nafus, 2016). These have become the primary descriptors for the production and uptake of technologies which facilitate an ever-increasing capacity to ‘track’ oneself in an ever-expanding variety of ways (Lupton, 2016a, 2016b,

2015, 2014, 2013, 2012; Schull, 2016; Till, 2014; Van den Bulck, 2015). These technologies have been co-constructed with movements and communities that use and experiment with them (Lupton, 2016a; Neff and Nafus, 2016). Not all individuals who engage in self-tracking, though, are actively involved in communities for whom it is the primary organising principle. Increasingly, researchers have expressed concerns about the ways in which self-tracking technologies are being utilised by corporations and insurers as a means of surveilling populations, as well as inculcating self-surveillance amongst them and entrenching problematic discourses (Ajana, 2017; Ancker et al., 2015; Gilmore, 2016; Lupton, 2015, 2012; Moore and Robinson, 2016; Till, 2014). There is also worry that tech journalism outlets have acted as a cheerleader for this ‘dataistic paradigm’ (Ruckenstein and Pantzar, 2017). With this said, ethnographers of self-tracking have found that Quantified Self members have escaped this kind of ‘data fetishism’, engaging in self-tracking ‘as a practice of mindfulness, as a means of resistance against social norms, and as a communicative and narrative aid’ (Sharon and Zandbergen, 2017). Researchers have begun to imagine non-formalised practices of self-tracking (including some of those engaged in by r/paleo and r/nootropics users) as a form of ‘soft resistance’ where self-trackers ‘assume multiple roles as project designers, data collectors, and critical sense-makers who rapidly shift priorities’ (Nafus and Sherman, 2014). By these lights, perhaps my own communities of study are engaging in soft resistance, though I doubt they would necessarily conceptualise it as such. What you will see in Chapter 7, though, corroborates Sharon and Zandbergen’s conclusions: self-tracking is not as all-consuming, deterministic, or positivistic a practice for either paleo dieters or nootropics users as one might expect.

Self-tracking and self-experimentation play a significant role in the professed epistemic outlook of both r/paleo and r/nootropics. r/paleo in its FAQ advises new adherents to ‘Pay attention to your health and bloodwork and make decisions based on your own experience. ... There are a few apps out there that can help as well’. The latter sentence contains an embedded hyperlink to an app called ‘Paleo.io’, developed by one of the moderators of the subreddit, which tells users which foods can be eaten on a paleo diet and promises ‘hundreds of Paleo Approved Recipes’. The app ‘MyFitnessPal’, which allows users to track their food and nutrition intake, weight, and exercise, is commonly recommended as a way for new users to get a better grasp of what they are consuming.

r/nootropics formalises its recommendation to self-track more than r/paleo, where most advice revolves around making decisions based on one’s experience and feelings, which may in turn be

informed by self-tracking and quantification. The r/nootropics FAQ includes a recommendation that new users track their cognitive function over time with accounts on sites tailored towards individuals who want to self-experiment in order to improve their cognition (Cambridge Brain Sciences, n.d.; Quantified Mind, n.d.). The ‘Quantified Mind’ (figure 2) prominently asks users, ‘What Makes You Smarter?’, offering to allow them to ‘Discover your peak mental performance routine’, and promising ‘No more bad brain days!’. Cambridge Brain Sciences (figured 3) advertises itself as ‘A leading web-based platform for the assessment of cognitive function’, which is ‘Used by leading healthcare practitioners and researchers around the world to obtain accurate, quantified, and scientifically-validated measures of cognition’. It further trumpets its scientific credentials, claiming to be ‘Backed by 25+ years of scientific research’, and that its tasks have been ‘used in more than 300 peer-reviewed studies’.

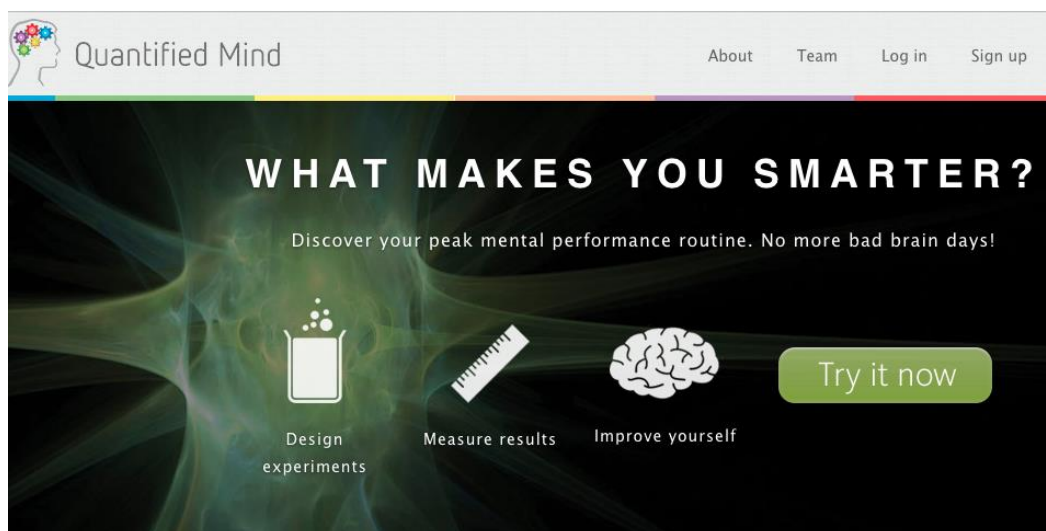


Figure 2 - The Quantified Mind, 24/05/19, <http://www.quantified-mind.com/>

CAMBRIDGE BRAIN SCIENCES Science ▾ Products ▾ More ▾ 1.833.350.9227 Sign in

A leading web-based platform for the assessment of cognitive function.

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- ✓ Over 8 million tasks completed globally and counting
- ✓ Backed by 25+ years of scientific research
- ✓ Tasks used in more than 300 peer-reviewed studies

Figure 3 - Cambridge Brain Science, 24/05/19, <https://www.cambridgebrainsciences.com/>

This particular formalised kind of self-tracking is far from ubiquitous in either of the communities I studied. Instead, in Chapter 7 I use the term ‘self-monitoring’ to describe the ways in which individuals keep track of their practices, behaviours, and associated internal states and appearance over time. There is overlap with the more formalised mode of self-tracking, but the generalised term helps by including more informal self-experimentation, especially that which does not involve quantitative measures.

Online patient communities

One further source of literature for this thesis comes primarily from medical sociology, and centres on the extensive study of online patient forums, groups, and communities.

An area of study since before the turn of the century has been the rise of the ‘expert patient’ and the concomitant challenge to the expertise of doctors (Haynes et al., 2002; Joanne and Mary, 2004; Wilson, 2001). Early work in this genre cites government hopes that the increasingly informed patient will transform the doctor-patient relationship from a ‘professional led’ interaction to a ‘doctor-patient partnership’, ‘in which expert patients ensure that treatments are appropriate to their individual needs’ (Illman, 2000 in Fox et al., 2005). From the beginning, however, researchers have been concerned that far from challenging ‘dominant traditions in biomedicine’, expert patients will instead ‘adopt these conventional ways of thinking about body shape and size, illness and health’ (Fox et al., 2005). This fear does not always appear to have come to fruition, with many online health communities and patient forums instead acting as conduits for new narratives, understandings and knowledges about health conditions to emerge (Mazanderani et al., 2012; Wyatt et al., 2013). This is unsurprising considering that many patient communities have formed around conditions that are understudied, poorly understood, stigmatised, chronic, or a combination of all four (Epstein, 1996b; Mazanderani et al., 2013; Rabeharisoa and Callon, 2004).

Support groups are used by people with conditions or concerns, usually chronic, which are significant enough that they manifest as part of the person’s identity. This bears similarity to both r/paleo and r/nootropics, where if somebody is regularly contributing to the forum then the likelihood is that they identify as someone who ‘does’ paleo or nootropics. Consequently, there is something to be learned from how people conduct themselves on patient support forums, particularly given that a significant proportion of threads involve seeking advice or knowledge in a similar way to many that I analyse from r/paleo and r/nootropics (e.g. Adams, 2011; Armstrong et al., 2012; Coulson, 2005; Coulson et al., 2007; Mo and Coulson, 2010; Rasmussen et al., 2007; Winefield, 2006). There is some exploration of presentation of self and performance in these contexts, including analysis of acceptable modes of explanation in a pro-anorexia forum (Fox et al., 2005) and the management of ‘authenticity’ in a suicide support forum (Horne and Wiggins, 2009). These grant some illumination of both the alternative modes of reasoning supported by forums which deny authority to traditional ‘experts’, as well as the difficulties individuals face in presenting their problems in such a way as to be taken seriously and to get the support or validation they require. One of my interviewees, E, echoed this latter issue when they told me that they do not often talk bluntly about the changes they made to their diet and the results they experienced, as they worry that they sound too miraculous to be true. This management of authenticity and credibility is a perennial concern for both r/paleo and

r/nootropics users: if they are too enthusiastic, they risk being seen as a ‘shill’ or an ‘evangelist’ even by others within their community; consequently, claims of progress or improvement have to be modulated with a careful self-awareness or else extensively evidenced in order to be taken seriously and rewarded with upvotes.

Patient communities also bear resemblance to self-improvement communities like r/paleo and r/nootropics in their use of *experiential knowledge* (Borkman, 1976) as an alternative or complement to knowledge derived from medical or scientific sources. First conceptualised and used for the analysis of self-help groups and other physical patient groups as well as individual patients (Abel and Browner, 1998; Boardman, 2014; Caron-Flinterman et al., 2005; d’Agincourt-Canning, 2005), experiential knowledge has proved itself utile as a means of understanding online discourses around health and illness (Armstrong and Powell, 2009; Chen, 2012), and the influence of online resources on doctor-patient interactions (Stevenson et al., 2007). In contrast with the ‘expert patient’, who ‘may be assumed to have the shape of up-to-date medical information’, the category of experiential knowledge is ‘vague and is used to encompass many types of experience’ (Pols, 2014). The users of r/paleo and r/nootropics, as well as not necessarily being chronically ill or having this form a significant facet of their identity, are not defined by their relationship to a medical authority, and so it is perhaps both more accurate and more illuminating to understand their alternative epistemic practices through the lens of experiential knowledge, rather than as a means of gaining expert patient status. A further commonality is that online patient forums and communities are often focussed on the question of how to get better or improve, and hence have considerable overlap with other forms of self-improvement.

This chapter contextualises the communities under study in the thesis, bringing into perspective their origins, purposes, and significant features. Additionally, I have highlighted the (sometimes limited) extant literature in each area, showing not only what work has previously been done but also how this thesis will build and extend upon this existing research. The information above should provide sufficient context for readers who are not familiar with one or more of the areas covered in this thesis to be able to understand the material covered and arguments made in the chapters that follow.

3. Authority and Expertise

This chapter comprises three main elements. First, I outline my research questions. A key part of this involves describing how I reworked questions during the course of the PhD process. This is not purely a narrative exercise; there are substantive reasons related to the construction of authority in the r/paleo and r/nootropics communities that required me to revisit and revise what I previously thought were the salient questions to answer. Having established authority and expertise as important (but not the only) issues, the next two sections of the chapter provide a theoretical backbone for the rest of the thesis. I begin with an exploration of existing analyses of authority which rely upon transcendent figures or principles as a means of validation, examining the possibility that ‘objectivity’ may be the principle invoked as the *sine qua non* of authority. I then suggest that users of r/paleo and r/nootropics, and indeed online self-improvement communities more generally, do not rely either upon objectivity or the transcendent authority of any individual or institution, instead relying on a mode of experiential biopolitical authority I refer to as ‘aspirational subjectivity’. This concept arises out of both an analysis of extant work on health-related online communities and self-help groups, and as a result of my own findings. Similar to conceptualisations of ‘being differently the same’ in medical sociology (Mazanderani et al., 2012) where patients contingently value the experiences of others with the same condition, aspirational subjectivity describes a process whereby users tend to listen to those who have walked the path they wish to walk, or possess skills or knowledge they themselves aspire to (or think they do) possess. The final section provides a detailed analysis of how authority and expertise interact in an attributionist framework, using a Strong Programme-derived definition of authority as ‘discretion in the classification of objects and concepts’ and an understanding of expert status as derived from the delegation of cognitive or epistemic authority to an actor or actant. This chapter, then, not only provides a robust contribution to the theoretical understanding of authority, but also furnishes us with tools that will be used within the findings chapters as a means of understanding how authority is constructed and negotiated in these communities.

Research questions

When this project began, I had two research questions:

1. How do users immersed in online forms-of-life delegate epistemic or cognitive authority, or attribute expert status?
2. What affordances are granted, and what obstacles are created, by a community's existence *qua* online community?

These questions guided my initial research into r/paleo, but it quickly became apparent that answering them would not tell the whole – or even most – of the story of authority and expertise in this community. In this section, I want to consider each question in turn, explaining what motivated its inclusion, before highlighting its inadequacies. The negative space created by the holes left where these research questions once existed will then be filled with new questions, which are answered by the findings chapters of this thesis.

Research question 1

‘How do users immersed in online forms-of-life delegate epistemic or cognitive authority, or attribute expert status?’

This project began as an attempt to understand issues of expertise and authority as they pertained to online communities, from the perspective of STS. I had significant philosophical problems with one of the most popular accounts of expertise in STS, that of Collins and Evans (2018, 2007, 2002). This account says that expertise is something *real*, possessed by humans with a particular kind of tacit knowledge, gained through immersion in a particular form-of-life for a long period of time. *Experience* then becomes the *sine qua non* of expertise. The problems they are trying to solve in proposing this model are the problems of ‘legitimacy’ and ‘extension’: that is, how can experts manage to be *legitimate* (that is, not anti-democratic, and therefore not unfairly locking sets of people out through credentialism or similar gatekeeping processes) whilst not *extending* the category of expert too far (and thereby allowing people who do not know what they are talking about to be called experts).

I have two major concerns with this ‘normative realist’ approach to expertise that considers individuals experts by dint of their tacit knowledge gained from immersion in a particular form-of-life. This places the burden of *recognising* expertise upon ‘lay-people’, who are expected to be able to distinguish between them using sociological nous and various discursive methods. Expertise, then, is something *real*: physicists *just are* those people who have spent significant

periods of time in communities of physicists, and our role as non-physicists is to be able to recognise that expertise and listen accordingly. This positioning of expertise as something real that must be respected follows from Collins' and Evans' perception that STS has moved too far in the direction of allowing *just anyone* to be an expert on technical matters. Others have given salient criticisms of this premise (Fischer, 2011; Jasanoff, 2003; Owens, 2011; Wynne, 2003).

My first concern is that the realist model, in embracing expertise that inheres in the person, has deleterious socio-political effects: it allows scientists, academics, and others who wish to be known as experts, to sit back in complacency and expect audiences to listen to them by dint of their considerable experience. There is no burden upon them to learn to communicate their ideas effectively or persuasively. Conversely, charlatans and snake-oil salesmen will *always* be capable of this kind of articulation, leading to a situation in which the 'experts' are easily outmanoeuvred by those who are adept at pretending that they know what they are talking about. To put this in the language of post-2016 political discourse, it exacerbates the problem of 'post-truth' politics. This is salient not only in the political arena, but in any area of life where what people ought to believe and how they ought to act are disputed. This only adds to concerns around the fundamentally anti-democratic nature of expertise (Turner, 2001), being a concept which requires some to recognise a greater capacity in others to resolve particular issues than they themselves possess.

Secondly, this account is curiously lacking in awareness of the limited remit of most 'experts'. There is a technocratic assumption throughout most of Collins and Evans' work that there must always be an expert who is right for the job, and policy-makers ought to be concerned with correctly identifying and recruiting said expert. The first problem is that this assumes there is a correct and discrete domain of expertise that can be identified. Moreover, even if such a domain can be identified, the account assumes a uniformity to technical fields that does not exist in most cases. If one were to consult ten nutritional specialists for a dietary prescription – for example, what kind of diet might work best for weight loss - one would likely receive ten different answers depending on their background, prior beliefs, specialisms, ethical commitments, and various predilections. They might all have a similar *amount* of experience, and suitable credentials too, and they may even have been immersed in the same (or overlapping) communities. This would by no means guarantee consensus in their answers. The normative realist account gives no

reasonable means of differentiating between these individuals: they are all just experts.¹² The problem, then, is that Collins and Evans' account is only suitable for what Stephen Turner calls 'Type I' experts: those whose expertise is universally accepted and validated within society (Turner, 2001). They have little to nothing to say about Type II experts (such as astrologers or alternative medical practitioners) whose expertise is only partially accepted, or Type III experts (such as fitness gurus) who have to 'make their own' audience.¹³ Expertise, for Collins and Evans, amounts to little more than *skill* that has been gained by a particular process of immersion. Their account is effectively asocial, preventing it from being useful as a means of mapping how people decide what to believe. It is missing one of the key functions of any account of experts and expertise.

To overcome these problems, I put forward an attributionist model of expertise as delegated cognitive authority, which places the burden upon those who wish to be viewed as experts to make themselves trustworthy epistemic or cognitive agents in the eyes of their intended audience. Moreover, this model recognises the epistemic difficulties created by understanding that different 'experts' are listened to by different audiences. This is not to throw away the baby with the bathwater: there is much to take from Collins and Evans' notions of *interactional expertise* and *contributory expertise*, and tacit knowledge gained by immersion in a form-of-life is a very useful metric for *skill*. My contention is that defining *expertise* in this way is unhelpful in the context of STS, which concerns itself with how expertise is conceptualised and received.

With these considerations in mind, I felt that an online community focussed around nutrition would be an ideal site to explore and develop alternative understandings of the attribution of expertise in areas of little scientific agreement. I imagined that my research might uncover distinctive practices of delegation of authority to individuals based on their charisma and capacity to manipulate and present evidence. I was also interested to explore whether 'credentialed experts' such as doctors and scientists would be the most respected members of the community or whether they (as well as their words) would in fact be treated with suspicion.

¹² Collins and Evans suggest a number of ways of deciding which expert to listen to (they call this 'meta-expertise') but notably no mechanism is provided for deciding between two equally well-qualified experts within a particular field, unless one of them is clearly backed up by a far larger number of similarly experienced experts than the other.

¹³ Types IV and V are concerned with bureaucratic authority, and are outside the scope of this thesis.

I was, as it happens, correct in these suppositions. These practices do form part of the epistemic structure of r/paleo and r/nootropics. They are not, however, the *only* salient feature of these communities from a standpoint of understanding who and what members decide to believe. The problem of expertise certainly exists and is addressed within the community. However, there is no set of individuals who can be identified as being attributed expert status by all or most of the community. The closest we come are some of the moderators and more active members of the community (though they are still only recognised by other active members), or some high-profile gurus in the case of r/paleo. Instead, many people navigate the problem of expertise by avoiding delegating their epistemic authority to single individuals altogether. They ‘shop around’, reading and synthesising multiple accounts to get what they need, utilising a mix of empirical and experiential evidence supplemented with their own experiences and knowledge of their bodies.

The first research question of the PhD is not quite a category error; it certainly describes a real phenomenon. However, to use it as the sole guiding question for this thesis would be to miss vital nuances in understanding the epistemic behaviours of online self-improvement communities. The delegation of authority to individuals is important but is not the only means by which users navigate epistemic quandaries. As such, the first question becomes:

1. How do users of online self-improvement forums negotiate the problem of expertise (understood as deciding who and what to believe)?

Research question 2

‘What affordances are granted, and what obstacles are created, by a community’s existence *qua* online community?’

Beginning the project, I had some awareness of the issues surrounding expertise that might pertain differently to online communities than to their physical counterparts. In an earlier piece of unpublished work, I wrote:

As much online discourse is either anonymous or pseudonymous, the internet potentially poses uniquely difficult problems related to anonymity. It is commonly argued that in order for one to legitimately rely upon testimony, it is necessary to be able to scrutinise the speaker (Fricker, 1995).

I then go on to explain ‘common desiderata for choosing between two putative experts’ as laid out in multiple papers (Collins and Weinel, 2011; Goldman, 2001; Walton, 2010), explaining their varied applicability to online discourse. This moves through the examination of arguments, counter-arguments, and responses (possible online); to examining the number of people who agree with them (again possible online); to scrutinising their credentials (difficult when considering anonymity); to critiquing their track record (a variable problem online due to the inconsistent use of persistent identifiers); and finally examining potential sources of bias (which is difficult in nearly all realms, but can be further exacerbated by the anonymity issue). I concluded that Web 2.0 in particular creates applications that ‘replace the authoritative heft of traditional institutions with the surging wisdom of crowds’ (Madden and Fox, 2006). That is to say, the aforementioned issues are a direct result of the massive increase in availability of information, as well as the associated difficulty of assessing its credibility (Flanagin and Metzger, 2008).

Two developments required this question to be altered. First, I found that while my initial concerns about the methodological challenges of the internet have some salience, they do not give a complete picture of the issues that users, moderators, and administrators negotiate on a daily basis. These users, it turns out, are acutely aware of the problems presented by anonymity and the volume of information with indeterminate credibility, and have developed (consciously or unconsciously) methods to mitigate these challenges. These methods and their attendant issues are highly differentiated by platform and community. This formed part of the justification for including a second case study in the thesis, as practices of moderation and community design differed significantly even across spaces occupying relatively similar reddit niches (r/paleo and r/nootropics both being ‘self-improvement’ communities, broadly construed).

Second, as the project continued I was introduced to a greater array of literature dealing with problems ‘inherent’ to online community, such as anonymity and credibility. For example, there is substantial work dealing with the creation of ‘public goods’ as a means of creating norms of discourse (Burnett and Bonnici, 2003; Donath, 1999; Kollock, 1999; Smith et al., 1997). Similarly, I use the language of affordances, which has previously been articulated with reference to social media by other scholars (Bucher and Helmond, 2018; Evans et al., 2017). Much of this literature comes from the early years of internet studies but remains relevant to this thesis both because of

the issues it deals with and because spaces like Usenet¹⁴ bear similarities to reddit in their format and atmosphere.

Consequently, the second research question is no longer what affordances are granted and obstacles created by the community's existence *qua* online community. Rather, the question is:

2. How are the features and affordances of online platforms used to mediate issues of authority, credibility, and trust in areas of life with considerable scientific uncertainty?

This question is explored in depth in Chapter 5, which centres around the user-moderator relationship on reddit and makes the argument that users and moderators are engaged in a continuous dialectic. Moderators have a particular vision for their community, especially in terms of preserving the quality of discourse (a metric that itself is not value-free). They utilise the affordances available to them (building FAQs and other 'public goods', making and enforcing rules regarding post content, applying descriptive labels to posts and usernames, and so on) to actualise that vision. This deployment of technology is always subject to interpretive flexibility and users respond in unexpected and often subversive ways. This continual tacking back and forth between moderator action and user response constitutes a dialectic which is rarely complete, and which has spill-over effects on the atmosphere and conduct of the forum.

Conceptual tools for understanding authority and expertise

At this point, we have two refined research questions:

- 1. How do users of online self-improvement forums negotiate the problem of expertise (understood as deciding who and what to believe)?**
- 2. How are the features and affordances of online platforms used to mediate issues of authority, credibility, and trust in areas of life with considerable scientific uncertainty?**

These questions are addressed in Chapters 5-7, but conceptual tools are required in order to do so. The rest of this chapter is devoted to: a) synthesising a definition of 'authority' from multiple

¹⁴ A worldwide distributed discussion system predating the worldwide web, with 'newsgroups' which resemble contemporary bulletin board systems and internet forums.

literatures; b) outlining an understanding of expertise as delegated cognitive or epistemic authority. The former section will illuminate my analysis of *experiential knowledge* and its role in users' solutions to the problem of expertise. The latter section, on expertise, will be used to understand the delegation of authority to external actors and actants (non-human actors) including gurus, moderators, and test results.

A definition of authority

Influential analyses of authority¹⁵ have typically emerged from political theory and often view the concept with suspicion. Authority is at base a form of *power*, which as Brigstocke (2013) notes is seen by theorists variously as a form of domination (Dahl, 1957; Lukes, 2004) or as a neutral or even positive social relationship (Barnes, 1988; Parsons, 1963). Authority for many theorists forms a subset of the uses of power. I want to engage with the argument as to whether authority constitutes *power-plus* or *power-minus* and make the claim for a definition of authority more in line with Barnes' (1988) *power-minus* model before grappling with the nuances of how authority is legitimated, drawing in large part on a special issue of the *Journal of Political Power* from 2013 which focussed on authority.

Authority and power

Authority, as stated above, tends to be defined in some way as a subset of power. It could be *power-plus*: having some power *to* or power *over* whilst also holding institutional backing or a similar form of external validation, or 'the power to make commands and have them obeyed' (Hearn, 2012: ch2). This definition has an intuitive appeal to it in terms of how we use the word 'authority' on an everyday basis, and Barnes describes it for this reason as the 'received view': that authority is *power-plus* consent, legitimacy, institutionalisation, or something similar. Barnes, however, considers authority 'power-minus' (1988, 190): a 'passive form of power that lacks

¹⁵ This term deserves some disambiguation. 'Authority' might mean purely 'epistemic authority' – as in, 'Tim Squirrell is an authority on internet communities'. Alternatively, it might mean a broader form of authority – for example, the Greater London Authority which has power over policy in a particular administrative area. Many of the theorists I cite here are primarily speaking of the latter kind of authority. My work concerns the former kind, which can properly be considered a subset of authority as a whole. From here, *authority* as it pertains to my research should be considered 'epistemic authority' unless otherwise stated.

discretion or the capacity to initiate action' (Hearn, 2012: 27). From this perspective, authority enforces routine understandings without being held accountable (*ibid.*). Instead of pooling legitimate authority to create power, those who hold authority are responsible for vivifying and validating the application of particular concepts such as the rules of games or the application of scientific techniques. They take on the role of mitigating Wittgensteinian uncertainty about how one ought to follow the rules, routinising our understanding and enforcing that routinisation. Those who hold authority, then, act as relatively passive agents of power, directing it whilst 'true power lies off stage in the hands of those who write the scripts and establish the routines that we follow, under the guidance of authorities' (Hearn, 2012: 27). This move to a *power-minus* model of authority is helpful in that it recognises that power is something that (as Parsons argues) is a property of a whole system (or society) *but* that its distribution within that system is selective. Barnes argues that

Social power is precisely a feature of a set of interacting individuals. It is their general capacity for action, and exists as a distribution of knowledge which they carry and sustain. ... Power is embedded in society as a whole. But discretion in its use is usually distributed more selectively. Power structures or distributions of power are actually ... distributions of discretion in the use of power. (Barnes, 1988)

This idea that discretion in the use of power is unevenly distributed gets close to my own conception of what we mean by 'authority'. Social power is a distribution of knowledge which a set of interacting individuals carry and sustain. Knowledge exists in the classification of objects and concepts: to say that we 'know' something is to share the meaning of that thing (whether it be an object or a concept) with another person or group.¹⁶ Authority is discretion in how those objects and concepts are classified. This analysis derives straightforwardly from Foucault, who argues that knowledge is created through power (Foucault, 1980: p59). Power, he argues in *Discipline and Punish* (Foucault, 1991) is generative: it forms knowledge and produces discourse (Foucault, 1980: 119), as well as allowing individuals to become aware of and master their own

¹⁶ By this analysis, what is commonly thought to be 'individual knowledge' – something that is known only by one person - is in fact 'belief'. Following Kusch (2002), knowledge is held by groups rather than individuals. The same argument is made by David Bloor in the second edition of *Knowledge and Scientific Imagery* (Bloor, 1991).

bodies (ibid.: 56). Authority, then, is control over *how* that knowledge is produced and applied, and how those discourses are created.

The main issue I take with Barnes' analysis is that authorities by his own lights should be far from passive agents. Given that rules and concepts are shaped and reshaped through their use (Barnes, 1983), those who hold authority have the capacity (to a limited extent) to direct the classification of objects and concepts in the domain over which they hold authority. Power, then, does not lie 'behind the scenes' as Hearn would have it on Barnes' analysis; rather it inheres precisely in the quotidian interactions between comparatively lay audiences and those who have the authority to direct them in how objects and concepts are properly classified. Proceeding logically from this definition of authority as discretion in the classification of objects and concepts, authority is not something that is necessarily 'communicative', requiring a relationship between a knower and one who seeks to know. Rather, authority can inhere in the individual, who ultimately has sovereignty over how they classify the world for themselves. It can also inhere in the practices, knowledge, and discourses that they adhere to. That sovereignty must be disposed of if they wish to communicate with anyone without a constant meta-dialogue over what precisely they are talking about, but it theoretically exists. Consequently, it can be delegated: when we listen to and believe others, we delegate our authority to classify the world to them or the systems they adhere to. I go into more detail about this in the section on 'expertise' below.

Legitimation of authority

With a definition of authority in hand, we can turn to the question of how authority is legitimated. That is, how does one actor convince others that they ought to be listened to? This invokes questions of how widely (and evenly) distributed authority is, and how those who would seek the status of 'authority figure' justify that status. In understanding our relationship with those who possess authority, Hannah Arendt imagines it as a power that is coercive, though which does not depend on the use of physical force: 'Authority implies an obedience in which men retain their freedom' (Arendt, 1977). She sees it as potentially enabling, allowing us to move through the world in a way that makes sense. I disagree with the charge that authority is necessarily coercive (which itself hinges on the argument that authority is *transcendentally legitimated*, which we will get to), but agree that the relationship can be enabling. This account, though, forms part of a corpus of understandings of authority in political science that focus on a 'historical narrative of modern rationalisation, bureaucratisation and elimination of 'experiential'

forms of authority based on tradition and charisma' (Brigstocke, 2013: 112). These theoretical accounts suffer from the problem that experiential forms of authority are alive and well, and are important to how power is produced both in the communities I have studied and elsewhere (Dawney, 2013; Millner, 2013; Noorani, 2013). These forms of authority are explored primarily in Chapter 7. With all this in mind, the following sections concern themselves with the possible mechanisms by which authority can be legitimated, beginning with the idea of 'transcendence' before moving to consider (and ultimately, in this instance, reject) 'objectivity', finally introducing the concept of 'shared subjectivity' to illuminate our understanding of the groups with which this thesis concerns itself.

Authority as appeal to transcendence

There is something, though, to another argument made by Arendt: that a claim to authority requires validation by some external force greater than the authority figure themselves (Arendt, 1977: 97). In other words, to stake a claim to authority is to claim that you 'know better' than somebody else in some way that is relevant to the matter at hand (Blencowe et al., 2013: 2). Contemporary theorists of authority (Blencowe, 2013; Blencowe et al., 2013; Dawney, 2013; James, 2013; Millner, 2013) consider authority to be pluralising: there are more forms of authority now than ever, thanks in part to the erosion of the power of kings, states, and gods. Moreover, there is a recognition that authority can come from experience (Dawney, 2013) and a general acceptance that this kind of authority can (and perhaps *should*) be embodied in individuals who occupy divergent lifeworlds, whose bodies and experiences are not only those of the heterosexual middle-class white male. As such, this claim to 'know better' can come from many sources, including the experiential (Epstein, 1995; Wynne, 1998).

Many contemporary theorists (e.g. Blencowe et al., 2013) retain the idea that authority is necessarily *transcendent*: that it achieves its power by appealing to some idea greater than itself. By these lights, the users I spoke to, observed, and analysed, vest their trust in the words of others as a product of those others' embodiment of some transcendent principle. In my case studies, because of the STEM-enthusiasm of many redditors, that transcendence could be 'science': the idea of the scientific method, of experiments and labs, of white coats and quantitative analysis and *p* values, as something external and greater than the humans who practise and disseminate it. This view certainly has its merits: there is a tendency among 'science enthusiasts' to valorise the idea of science as a transhistorical arbiter of objective truth. Any doubt that a significant chunk

of people believe something like this can be dispelled by a quick visit to r/science, or r/futurology, or any of the many other STEM-oriented subreddits that populate reddit. In these places, there is a fervent belief that even though science proceeds by falsification and its results are always subject to revision, our current theories are for all intents and purposes *true*.

This, though, is not how I have come to understand the delegation of authority in the groups I studied. Claiming scientific credentials or authority rooted in one's capacity to speak *for* science is far from certain in its capacity to grant one a sympathetic ear. Users who are medical doctors or appeal to doctors' authority are often told that these individuals are systemically biased against their community (in r/paleo) or have a vested interest in prescribing drugs that many users consider actively harmful (in r/nootropics), or that they are not sufficiently learned in the specifics of diet or nootropics that their experience constitutes authority. Likewise, users who refer to scientific studies to back up their arguments are often informed (in various tones and levels of detail) of the flaws in the evidence they present for their claims. Speaking *of or for* science does not insulate you from criticism.

One might respond to this in the same way an enthusiastic Catholic would respond to learning of a corrupt priest who has transgressed or given bad advice: they are a poor emissary for science, as the priest is a poor emissary for God. That does not diminish the power of God, nor of science, to act as an external validator of the authority of humans. This, I contend, is a weak argument in both cases: if laypeople are capable of deciding who does and does not speak with transcendent authority, then that authority is no longer transcendent. That authority is contingent on our decision to *listen* to it, both in the specific communities I have studied and with respect to science in general. Authority is only transcendent insofar as it cannot be reasonably challenged, and that relationship is only possible in a totalising power relation. A good example, given by Arendt (1977), is the parent-child relationship wherein the adult can end any argument with 'because I said so'. The same cannot be said for the relationship between users who voluntarily opt in to a forum centring around nutrition or cognitive enhancement, and the many people who claim expertise on these subjects. The latter's claim might *appear* to appeal to transcendence, but their grasp upon it is contingent upon the audience's willingness to listen.

This is not to say that transcendence does not exist or is not a means by which authority *can* be validated. Rather, my argument is that for a significant number of people (at the very least many of those I studied for this thesis) transcendence does not come into the equation. Their decision

to listen to any actor or actant is made autonomously, and they are free to supplement it with relationships with other actors or to cease the relationship at any time.

Authority as appeal to objectivity

If validation of authority claims does not need to come from a source such as the church or the absolute power of the state (or the absolute truth of science), then where does it come from? Clearly there is still something that allows the speaker to claim authority and the listener to attribute it, even if that attribution is contingent. The answer may lie in an idea of objectivity.

In Daston and Galison's tome on scientific objectivity, we learn that it has a specific history, emerging in the nineteenth century to form what is now considered a foundational epistemic virtue for scientists (Daston and Galison, 2010). For Blencowe et al (2013: 16) objectivity 'is the common, the shared ground from which meaningful subjectivity commences; it is a promise of escape from finitude and singularity.' This sounds an awful lot like transcendence, and James (2013) understands Dawney and Millner as arguing that authority emerges 'from a site which radically exceeds the metaphysical conception of a subject as a self-positing, self-identical instance which is nevertheless *subjected* to transcendent forms of authority ... and then bound together in a community of subjects on the basis of a shared identity and a shared subjection to a common transcendent principle.' Blencowe et al (2013: 17) name this principle as objectivity: 'Objectivity is a particular type of veridification. ... Objectivity names the legitimacy of scientific institutions, it justifies legal systems.' Objectivity, then, is *the* transcendent principle under which communities are organised and by which authority is legitimated. I want, however, to argue against this idea that objectivity might be the basis for the formation of authoritative relationships in the communities I am studying, and instead articulate the argument that authority is in many cases attributed to those who have achieved (or at least are significantly further on the path towards) what those listening to them also wish to achieve. Objectivity does not enter their decision-making calculus, and indeed the idea of objectivity is one that is implicitly understood to be invalid within these communities as a result of their negative experiences with traditional modes of authority. These modes of authority (such as medical and scientific authority) tend to lean (implicitly or explicitly) on the idea that they are objective: that they transcend mere belief, and are capable of telling us fundamental truths about the world. Because people within r/paleo, r/nootropics and elsewhere have often felt betrayed or let down

by people embodying these kinds of authority, they have a greater propensity to reject transcendence and objectivity as legitimating forces for authority.

When making medical claims, the recognition that somebody is a licensed practitioner with years of experience and training and signed certificates on their wall is likely to give validation to their testimony. To some theorists those accoutrements are seen by the non-authoritative party as providing *objectivity*, understood as a ‘source of judgement beyond subjective perceptions, positions or understanding; as reality beyond individual knowledge; as the outside of both community and thought’ (Blencowe, 2013). But here I want to sharpen the argument made by Blencowe: we do not need to lean in to the fraught idea of objectivity in order to understand authoritative relationships. There is no need to mark objectivity as ‘an essential condition of authoritative relationships’ (ibid: 10), or as ‘the essential outside of experiential knowledge ... a position outside of particular perspectives ... and outside of the subjective realm of interpretation’ (ibid: 15). Rather, we can simply make the claim that the authority figure is seen as *less subjective* than those who are listening to them. That diminution of subjectiveness comes from their experience: they have occupied a different form-of-life to the subjective listener, gaining knowledge and know-how in a field that they have not. They are not *infallible*, hence the common request for a second opinion when the patient is concerned the doctor might not be quite right. However, they are collectively accepted to know better, based on some collectively agreed criteria of knowing (ibid.).

It is worth making and noting a distinction here between *subjectivity* and *subjectiveness*. Subjectivity is a particular experience of being-in-the-world, whilst subjectiveness is a propensity to having one’s experiences (or lack thereof) influence or bias one’s views and thoughts.¹⁷ Users in r/paleo and r/nootropics are not looking for someone with *less subjectivity*, as subjectivity cannot be quantified, but rather someone with diminished subjectiveness. That is, they value particular kinds of subjectivity, and are searching for individuals who have been through a particular set of

¹⁷ More properly, subjectiveness is not just about having one’s views and thoughts influenced by (in)experience, but about how people with limited experiences in a particular area are more likely to place undue weight upon some forms of experience and evidence over and above others. The smaller the sample size of experiences they have to draw upon, and the less immersion they have had in a particular form-of-life, the higher the likelihood they are unable to identify salient information or to over- or under-weight the significance of particular pieces of information. Subjectiveness can be diminished through the acquisition of both tacit and explicit knowledge about a field.

experiences. By dint of these experiences, these individuals have a different view of the world that is less subject to being influenced by unknowns and preconceptions. The users I interview and discuss in this thesis are not convinced that others' experiences have rendered them objective; rather, they have made them *less subjective*. This might sound like a measly distinction: after all, is objectivity not simply a condition caused by the absence (or sufficient) diminution of subjectivity? The answer is no. Objectivity is not attained through a reduction in bias or other subjective influences, in the same way as truth is not attained through the reduction of error. This tracks how r/paleo and r/nootropics users *perceive* others: they do not treat the words of any individual as sufficient cause to pursue a particular behaviour. Instead, they combine these words with the words of others as well as the 'testimony' of various actants: blood tests, purity tests, heavy metal tests, scale measurements, calorie expenditure estimates, tape measurements, IQ tests, brain training exercises, and so on. There is a recognition that no individual has all the answers, born out of the knowledge that those who were once seen as objective (medical doctors, state nutrition guidelines, scientific papers) can be flawed and can deceive either intentionally or through incompetence. These negative experiences are crucial in forming the epistemic regime of r/paleo and r/nootropics users: since their trust in modes of authority which are highly valorised has been eroded, they are less willing to consider any individual or group authoritative by dint of their objectivity. This renders their delegations of authority fragile and subject to revision if they do not cohere with the subject's own experience and perception of the world.

Authority in shared subjectivity

Having established that the condition of authority in the groups I study is not *objectivity* but *diminished subjectiveness*, a further question is how users recognise another's diminished subjectiveness. The answer I provide here is that these users know or have achieved the things that other users wish they themselves could know or achieve. It is similar to the definition of *biopolitical authority* provided by Blencowe et al (2013: 20), imagined as

authority that obtains from having experienced biological or economic life; from having experienced, touched upon the limits of, life. Biopolitical authority is ... the power and attraction that congeals around a diversity of performances and manifestations of experiencing life. To be biopolitically authoritative is to mediate experience of life, to be a conduit to the force by which life

(objectivity) pushes back. To know life, to make life manifest, to make a promise that life is real ... to provide a link to life is to generate biopolitical authority.

This definition is useful in illuminating how people imagine those who have experiences which they themselves have not had. Authority, though, is not immanent only in those who 'mediate experience of life': there are many experiences that we do not understand, do not seek to understand, and do not seem to pertain to our interests or the subject at hand. They are consequently not grounds to attribute authority in a particular area. For example, a Reiki practitioner might claim to have experienced the healing power of projecting energy over distance; a Reiki sceptic would not recognise this as relevant to a medical conversation. There must be some resemblance between the person's experiences and our own imagination of what it *means* to go through something: some similarity relation between us and them that allows for empathy and therefore authority. We grant authority because we can imagine how and why a person's experiences would grant them an understanding of the matter at hand.

The mode of experiential authority in r/paleo and r/nootropics, then, is a kind of 'aspirational subjectivity'. The paleo dieter respects and attributes authority to the man with the glistening six-pack who describes his transformation from skinny weakling, or the woman with multiple sclerosis who went from using a wheelchair to riding a bike with the aid of an anti-inflammatory diet. They do so because those people have walked the path they wish to walk, and have usually done so with the discipline and determination that they themselves wish they could muster. There is a perceived strength of character which contributes to the authority relationship; a perception that I, too, could achieve what they have achieved if I took their advice (like their other clients and disciples) and stuck to the programme. This is not to say that physical appearance or transformation is the sole criterion of experiential authority, but rather to suggest these are common indicators that someone is likely to be attributed the status of authority. The attribution of experiential authority in r/nootropics tends to come less from the miraculous transformation, and more from the capacity to read, digest, synthesise, and articulate the findings of scientific papers. The figures who attract the most plaudits in the subreddit are those who are capable of responding to questions with deep, considered answers that draw upon the available literature and state their position on the evidence and the conclusions. They are those who are well-versed in the state of science as it pertains to nootropics. Certainly, there are particular characteristics that are valorised within these individuals, but these tend to be characteristics that other users wish they shared (or perhaps see themselves as sharing). These individuals, then, are

considered less subjective by dint of their greater experience in the form-of-life under discussion. This is the grounds upon which they are attributed authority. Rather than *purely* the experience that they possess, as supposed by Collins and Evans, the model for being attributed expert status is one in which an individual is capable of making their experiences relatable to others who seek to follow the same path as them. Achieving the goals that the community valorises allows them to share the information on what it requires to achieve those goals.

Facts and figures

A complicating factor in understanding authority in r/paleo and r/nootropics is the prevalence of and dependence on various kinds of tests, figures, statistics, and measurements. As argued above, no individual's authority is infeasible, and even those who are attributed a significant amount of authority and credibility are likely to find that users supplement their testimony with other sources. The question here is whether these non-human factors can be considered to possess authority. The answer, I think, illuminates our understanding of authority itself since it turns upon what we consider authority to be. Blencowe et al (2013: 3), for example, define authority as 'a relation of free obedience based on consent and claims to 'know better''. The invocation of numbers and measurements as a means of deciding (for example) one's dietary intake or nootropic regime does indeed seem to cohere with this definition, basing one's decisions on the idea that the numbers (taken in conjunction with knowledge about what they 'mean') are likely to 'know better' than us in some meaningful sense. They might tell us whether we have *really* gained or lost weight (versus our more subjective conception based on looking in the mirror, say), or whether the drug we took was actually placebo (and therefore our experiences using the drug were mediated by our mind, rather than the active ingredient of the drug itself).

Thus, authority can indeed inhere in abstract concepts and actants. Authority means having discretion in the classification of objects and concepts. All individuals have the authority to classify all objects and concepts and try to understand the world for themselves. Instead, they choose to delegate that authority to others in many instances, and that delegation is what forms the authoritative relationship. We can delegate our authority to measurements and metrics and graphs in a similar way to the testimony of humans: we let them tell us how the world is. I am happy to allow these non-human objects the title of 'actant', as Actor-Network Theory suggests

(Latour, 2005, 1992). They cannot articulate themselves in the same way as humans, but they are treated as sources of understanding of the world in a way that is not dissimilar.

Conclusions on legitimation

The legitimation of authority delegated by others, then, is not totalising. It does not require us to appeal to gods, kings, states, or anything so final and unattainable as objectivity. Rather, delegating authority can happen because we consider another to be less subjective than ourselves: less subject to bias and ignorance, and more immersed in a form-of-life that has given them the ability to see an issue in greater depth and nuance. We might delegate our authority to them because they have walked the path we ourselves wish we could (or will) walk. We might also delegate authority to non-human actants that seem to provide alternative outlooks on or indicators of how the world looks that are not subject to our own perceptual defects.

Importantly, this kind of relationship is non-totalising not only because it does not require an appeal to the transcendental; it is also almost always *plural*. We delegate belief-formation and concept application to not just one but many actors and actants, retaining the ability to veto the input of one or more of them, as well as the final say over how we proceed both in terms of belief and action. The relationship we have with those to whom we delegate authority is enabling not just because it allows us to move through the world more easily, but because it allows us to understand the world and make decisions based on what we consider the best information available.

Expertise as delegated cognitive authority

In *In Defense of Anarchism*, Jonathan Wolff makes the argument that recognising authority necessarily involves abrogating one's freedom to make judgements (Wolff, 1998). Making one's way through the world necessarily involves relying epistemically upon others, and this section analyses in detail why that is the case and how it proceeds. I utilise the definition of authority developed above as 'discretion in classification and the application of objects and concepts', and bring in the idea of an 'expert' as someone validated by an audience as holding authority over a particular field or for the purposes of solving particular problems. This works in parallel with Barnes' understanding of power: society consists (among other things) in a distribution of knowledge, but the negotiation of the boundaries and terms of this knowledge does not proceed easily.

Each of us could in theory independently classify every object we encounter and create our own concepts to refer to phenomena. However, to do so would be both horrendously time-consuming and terminally confusing. No one person can have ‘first-hand’ experience of all the things they seek to know. There is simply too much in the world, and too little time in which to become competent in all the disciplines one would need in order to understand the most esoteric and technical claims made by the different fields of knowledge-production which constitute the web of knowledge we call society. Moreover, no two experiences will ever be exactly identical, and so even ‘first-hand’ experience of a particular object or concept is a finite set of something which is effectively infinite. As such, if we wish to say that we can know much of anything at all, we must rely on others for many of our beliefs about the world (Hardwig, 1991, 1985).

Further, to *know* something requires a shared conception of what that thing means (Bloor, 1996). Classifying objects or applying concepts involves the attribution of meaning to phenomena in the world. Meaning implies normativity: that there is a right way and a wrong way to apply a concept or classify an object. Normativity can only exist within collectives: there can be no ‘privately’ correct or incorrect application of meaning. Because, to take an example from Kusch (2002) it does not matter if I apply the concept *zappo* to any number of things, so long as the concept remains solely in my own head. There can be no agreement or disagreement from other people, and so no arbitration of whether my belief that a particular object is *zappo* is correct or incorrect. It makes no sense to say that I have knowledge of *zappos*, because there is nobody to share in my belief (ibid.). Our shared understandings of meaning rely on consensus. If there is no agreement as to what the meaning of a concept is, then we have no knowledge of the meaning of that concept. One might even go further and say that no concept in fact exists (Kusch, 2006). This means that when we rely upon others for knowledge, what we really rely upon them for is to tell us the ‘correct’ way of applying concepts. In the process of doing so we allow them to create and/or vivify the concept, or at least to provide instantiations of it from which we can attempt to extrapolate (Barnes et al., 1996).

This argument has two strands. First, knowledge requires meaning, meaning requires normativity, normativity exists only in groups, therefore knowledge exists only in groups. This

coheres well with other concepts of knowledge which go beyond the narrow definition¹⁸ provided by much traditional epistemology to take account of the ways in which knowledge is distributed and embodied (Akrich, 2010; Lave and Wenger, 1991). In particular, it provides a framework for understanding *experiential knowledge* (Borkman, 1976). Such a form of knowledge is often conceptualised as existing outwith or in competition with traditional epistemological frameworks. My addition to this argument is simply that these different kinds of knowledge – experiential and other – are treated in the same way. Instead of imagining that people have private knowledge based on their experience of a phenomenon, that form of knowledge is publicly legitimated by communities who use it. They may not do so explicitly, instead using oblique references such as ‘listen to your body’, but the *use* of experience as a form of knowledge (and sometimes a sovereign form) itself bootstraps the idea of this kind of knowledge through performativity (Barnes, 1983). Doctors may not recognise experiences as providing knowledge, but the community validates them as a legitimate knowledge-form.¹⁹

The second strand of the argument is that the world is too large and complex for us to negotiate all meaning by ourselves, and to do so would put us at risk of not being understood by others who do not share our meanings; as such, we defer to others in many circumstances to negotiate these meanings for us. This is where the concept of ‘experts’ enters. When a group of people delegates their cognitive authority for negotiating meaning to a particular person or set of people, I call those people experts. We accept that we individually rely upon others for our beliefs about the world (Hardwig, 1985). Given that knowledge is constructed by group consensus, and entire

¹⁸ ‘Justified true belief’ is usually how this definition is formulated. In order to have knowledge of something, I must hold a belief about the world. There must be good cause for me to have that belief, and the belief must also be *true*. The latter term is often cashed out as meaning that the belief ‘corresponds to the way that reality actually is’. Note that each of the terms ‘justified’, ‘true’, and ‘belief’ is subject to significant debate.

¹⁹ This perhaps merits some further explanation. Barnes, in his paper on bootstrapped induction (1983), explains how the use of a concept, repeated over time and across different agents, vivifies that concept. The institution of marriage is robust, for example, because it has been vivified over many generations, across enormous numbers of cultures, with particular traditions and practices associated with it. In the context of online self-improvement communities, the institution of experiential knowledge is vivified through its continual use and validation by members of those communities. They may tell others that their experiences are valid, or that they ought to listen to their bodies, or that nobody can know their own body better than them. Each of these phrases gives life to the idea that experiential knowledge is a *form of knowledge* which ought to be considered authoritative in the same way as other modes of acquiring knowledge. The continued use of experience as knowledge *creates* the idea that experience is, in fact, knowledge.

groups may be similarly ignorant about particular matters, it follows that we might *as a group* rely upon others for our beliefs, abrogating our collective cognitive authority to delegate meaning to an appropriate actor (note that this is non-voluntaristic). Whether we call these people to whom we delegate our authority ‘experts’ because we believe that they ‘know what they are talking about’ (Collins et al., 2010) or because we believe that they possess a kind of *phronesis* which means they will make judgements about matters in a consistent way (Majdik and Keith, 2011) is immaterial to this part of the argument. What matters is that groups can and do defer their epistemic sovereignty to subsets of our society. All analysis as to why we might do this, how a group decides to collectively delegate, to whom groups *ought* to or *do* delegate, and the effects of this delegation, comes after this basic conceptual argument.

Consensus as intrinsically localised

Once we understand expertise as delegated cognitive authority, the next step is to analyse the boundaries of authority within communities.²⁰ Here I advance the argument that all consensus is local, because all experts are local to particular audiences. This argument proceeds as follows. Knowledge hinges upon shared meaning (as outlined above). Experts are those who are given the authority to dictate concept application, and therefore meaning, in certain aspects of life. Since only *subsets* of any given social grouping delegate their cognitive authority to any given expert individual or group (and I will prove this premise in detail below), the meanings designated by those experts are local to that subset.²¹ As such, expertise is properly understood

²⁰ The term ‘cognitive authority’ has been used previously, in Patrick Wilson’s *Second-Hand Knowledge: An Inquiry into Cognitive Authority* (Wilson, 1983). Wilson uses the term to mean “influences that a user would recognize as proper because the information therein is thought to be credible and worthy of belief” (Rieh, 2002); in other words, cognitive authority rests in those who “know what they are talking about”. This is superficially similar to the definition I use, but our approaches differ in that mine is firmly rooted in Strong Programme thinking. Moreover, his work was developed before the popularisation of the internet as a means of communication and knowledge creation; as such, the work I am performing is quite distinct from Wilson’s, and work that draws upon his definition.

²¹ N.B. this does not mean that *all* meaning follows from the authority of experts. In many instances people will use meanings which are not shared by the experts they otherwise respect: nearly all people use the phrase ‘to beg the question’ in a way that is incorrect from an expert perspective, and yet the *meaning* of the phrase as commonly understood is this ‘incorrect’ one, *because* it is the consensus one. There are often multiple competing meanings, and sometimes meanings which are in tension with one another can be held simultaneously.

as cognitive authority delegated to some agent or agents, by a particular audience. This becomes particularly salient when we later come to understanding self-improvement communities as groups with localised knowledges about diet, nutrition, and supplementation.

This stands in contrast to standard Strong Programme analysis as put forward by Martin Kusch in his work on Barnesian bootstrapped induction (Kusch, 2006). Kusch posits that ‘the way of the multiple, local consensus’ is characterised by individuals calibrating their classification schemes by averaging out the differences between their own systems of concept application and those of the people they meet. Whilst it may be true that people change their views on a variety of topics on the basis of encounters with others, the argument from epistemic reliance advanced earlier shows that much of the time we collectively entrust to experts our authority to construct meaning.²² As such, here I provide an alternative justification for the ubiquity of local consensus, based on local delegation of cognitive authority. Delegation is necessary for consensus: if individuals were left to form their classification schemes on the basis of their own experiences and chance encounters with others, particularly in esoteric disciplines like the natural sciences, consensus (and therefore shared meaning, and therefore knowledge) would be rare. Abrogating our cognitive authority alleviates this issue.²³

Earlier in this chapter, we briefly visited Stephen Turner’s typology of experts from his seminal paper, ‘What is the Problem with Experts?’ (Turner, 2001). To briefly reiterate: he argues that Type I experts, exemplified by physicists, have (epistemic or cognitive) authority which is ‘universally accepted’ in their subject area in a society. Type II experts, such as astrologers, have

²² It may be the case that individuals and groups first delegate to experts, before negotiating the resulting meaning between themselves. Indeed, this seems the most likely way in which meaning is constructed within groups; only on rare occasions will the dictums of experts be uncritically accepted and perpetuated.

²³ One thing of note is that this analysis does not extend to *organised* encounters between individuals, such as teaching or training. These kinds of encounters can be useful for ameliorating gaps in tacit knowledge, which we can characterise as unspoken consensus over meaning (Collins, 2001). Moreover, much of the time we teach (and learn) by ostension, physically or metaphorically pointing at phenomena and classifying them in particular ways (Barnes, 1981). This fits nicely into the conceptual schema developed above: we can understand this as delegating our cognitive authority to a teacher, trainer or expert in an organised encounter, allowing them to pass on their conceptual classifications to us.

authority which is limited to certain audience groups. Type III experts, such as diet and fitness gurus create their *own* authority through their practices.

At first blush the existence of Type I experts might seem to contradict my argument that all consensus is local. As an illustration, imagine a world in which there is only one society, and in this society Type I experts exist and their authority to speak on a subject is universally legitimated. In this world consensus would be global rather than local.²⁴ However, Turner's Type I experts are idealised: there are in fact no authorities to whom cognitive authority is delegated by *everyone* in a society such that they can create consensus by fiat. For example, physicists (Turner's paradigmatic case for Type I expertise) are subject to distrust by certain segments of society who disbelieve them on the supposed safety of nuclear waste (Yearley, 2005), or who believe in flat-earth theories. Critically, this non-conformism can be rooted in background belief. For example, individuals who distrust medical authority are less likely to believe that there is overwhelming evidence to suggest that the MMR vaccine is safe (Casiday et al., 2006).²⁵ Likewise, as I will explore, those who distrust the prevailing medical attitudes towards diet are likely to believe that there is no firm consensus on what constitutes 'good' diet or nutrition. As such, delegation of authority is localised not simply by random chance, but in a systematic way influenced by the background beliefs of individuals in a group.

A further problem with the universality of Type I experts is that authority does not accrue to all individuals within Type I groups. For example, when there is a lack of consensus within a scientific field, either one side of the controversy is believed over the other by the vast majority of society, as was the case with Martin Fleischmann in the Cold Fusion controversy (Collins and Evans, 2007); or, alternatively, society becomes split, with some groups believing one group of scientists, and others believing another.²⁶ If you were unwilling to accept this as an argument for the non-existence of universal authority (and therefore Type I experts) you could posit this as an

²⁴ Strictly speaking, the consensus would still be local insofar as it belongs to a particular *time*. This hole in the thought experiment could be patched up by imagining that these experts have *always had* and *always will have* this authority. If anything, though, this strengthens my argument: there could never be such an authority; consensus must by its nature be local.

²⁵ For further work suggesting links between background beliefs and trust in particular kinds of authority, see (Kahan et al., 2011).

²⁶ It is worth noting that many (indeed often the majority) of people may simply not care enough to take a stand on who to believe.

example of Type I experts becoming Type II experts. However, the exclusion of one particular scientist, or set of scientists, or disbelief of those scientists on one specific issue, rarely erodes the collective authority of those in the discipline to continue to speak on the issues pertinent to their form-of-life. It is the universality of authority which deteriorates (if it ever existed).

One important question remains: what is the relationship between Type II and Type III experts? One key difference between the two types is that Type III experts' status is contingent upon the testimony of their beneficiaries, rather than upon tradition, the weight of history, or the approbation of a larger body such as a state or religious institution. This means that the nutritionist only receives expert status insofar as those to whom they give advice deem that advice worthy of (i) payment and (ii) recommendation to others (Turner, 2001). Their reputation *qua* nutritionist does not extend to *other* nutritionists; rather, there is an extent to which each individual nutritionist must create their own reputation and audience (though it is worth noting that their reputation as a nutritional expert does validate the *concept* of nutritional expertise, and so it does extend in some fashion). Additionally, multiple nutritionists may be in competition with one another and say directly contradictory things, and so to validate the expertise of one may be to deny the expertise of another. Consequently, whilst delegating authority to a nutritionist vivifies the category of nutritionists as individuals who can be experts, it does not necessarily mean that some other nutritionist can use this to bootstrap their own authority.

However, the barrier between the two categories is, I argue, permeable. Fitness and nutrition 'gurus' create their own authority and their own following, often using the kinds of tools and discursive constructions I will go on to explore in this thesis. These gurus not only build up their own authority but are able to propagate that authority on to others. When the number of gurus, and the number of 'followers' reaches a critical mass, there is little to distinguish this configuration from a community delegating its authority to Type II experts.

It would appear, then, that Types II and III can coexist in the same sphere, where there are some individuals who are trusted by a whole segment of a society, whilst concurrently creating their own authority with individuals outside of that segment: for example they might be commonly talked about on a fitness forum, but also write books or blogs which attract wider audiences.

Meaning finitism and authority

The systematisation of delegation outlined above is coherent with the tenets of meaning finitism, an ontological and epistemological framework which underpins SP (Barnes et al., 1996; Bloor, 2002; Kusch, 2002). This schema posits five things:

1. The future applications of terms are open-ended.
2. No act of classification is ever indefeasibly correct.
3. All acts of classification are revisable.
4. Successive applications of a kind term are not independent.
5. The applications of different kind terms are not independent of each other. (Barnes et al., 1996)

A simple example: when I choose to apply the term ‘cat’ to a new object, that act of classification does not determine how I should apply the concept in the future (tenet 1), but it does have *some* effect on how I will do so (tenet 4). Moreover, if I decide in the future that my use of the term ‘cat’ was incorrect in this particular instance (tenet 2), I can subsequently revise and reclassify it (tenet 4). Finally, my decision to attribute the term ‘cat’ in this instance means that I am *not* using the concept ‘dog’, ‘hare’, or ‘shoebox’; what I call this particular thing has effects upon what I call other things (tenet 5).

Applying these tenets to the concept of delegation of authority, we can say this: some individuals will not subscribe to the utterances of an otherwise universally-accepted authority, because doing so would alter not just the applications of the concepts those individuals specifically address, but other concepts too (Barnes, 1981).²⁷ For example, a paleo dieter might reject the claims of medical professions that consuming large amounts of ‘heart-healthy wholegrains’ is unequivocally a good idea, on the basis that doing so would conflict with related beliefs that they hold strongly about the world.

Further, we can see that simply because we have accepted an expert’s conception of meaning in the past, does not mean that we will continue to do so (tenet 1), or that we will not look back and decide that we were incorrect to trust them (tenets 2 and 3). This is exemplified by my interviewee JS, who spoke of some paleo gurus who used to be almost universally trusted within

²⁷ This idea can be traced back to Pierre Duhem’s work on the inseparability of concepts, hypotheses and assumptions within theories (Gillies, 1998).

the community but who are now ‘on the way out’, because they have turned into ‘glorified supplement salesmen’. However, delegating our authority to them in one instance *does* affect our propensity to do so again in the future: we often default to trusting those whom we have trusted in the past, with a kind of epistemic inertia requiring something substantial to happen in order for us to disavow or distrust a particular authority (tenet 4). For example, one nootropics user might have carried on buying with a particular vendor had he not begun to feel as though the effects of his drugs were incorrect for what they were labelled, and in hindsight determined that he had likely been delivered only sugar pills from that vendor. In addition, our decision to delegate to one particular agent has an effect upon our likelihood of delegating to others (tenet 5), as with the nootropics users who decide to purchase what is marketed as the same substance from a different vendor (for reasons of price or convenience), trusting that it is in fact the same substance and will have the same effects. Some experts may contradict or bolster the claims of others, and choosing not to listen to some of them may be necessary to maintain a coherent worldview.

The conclusion we can draw from the preceding analysis is that in most societies, most of the time, individuals create their beliefs about different things in different ways, with some beliefs arising organically from social interaction, whilst others are passed down from those to whom we delegate our decision-making authority in a particular field. Most beliefs form out of a combination of these two processes. Moreover, individuals defer in a way that is congruent with their background beliefs. This means that there will always be some people for whom delegating authority would be incompatible with the rest of their belief system, and so they do not so do – or at least cannot do so without significant cognitive dissonance.

Conclusions

Expertise, then, is a description for the attribution of expert status to a particular actor whom we consider worthy of delegating our cognitive or epistemic authority to. Authority is defined as discretion in the classification of objects and concepts and is delegated to others for many reasons. Some of these reasons are explored in the section above, where I analyse the concept of experiential authority and shared subjectivity as a basis for the authoritative relationship. There are no universally recognised experts, and nor is there necessarily a transcendent principle guiding the delegation of authority. The findings chapters of this thesis demonstrate the ways in which authority is both delegated to others (actors and actants) and retained, with individuals

solving the problem of expertise through selective listening or turning to self-experimentation and self-tracking partly as a means of avoiding the issue of deciding who is worth listening to.

The understanding of authority and expertise developed in this chapter shape the rest of the thesis. When reading the findings chapters to come, it is important to keep in mind the aspirational subjectivity which users strive towards in their interactions, particularly when they deny expert status to 'traditional' authority figures such as medical practitioners. In many instances, users who ask questions are looking either for someone with a greater grasp on the subject matter than they have, or else someone who has previously walked the path they wish to walk. Moreover, users' propensity to delegate authority to others is shaped and structured by the affordances of the platform on which they are talking: the votes other users receive, the labels next to their names, and their status as a moderator or regular user in the community all contribute to users' willingness to attribute them expert status. A user who receives a large number of upvotes on their opinion finds themselves in a position of being listened to, of being given credence. Other users are, in turn, more likely to give consideration to these comments simply by dint of the upvotes they have already received, adhering to a shared conception of meaning created by the invisible agreement of other users voting on the comments. Knowledge is created and vivified in part through consensus, though users also 'go their own way' and seek to synthesise the accounts of many others before engaging in their own self-experimentation practices. The experiences of each individual user are different, but they are in many ways structured around the need to reduce their own subjectiveness through listening to others or gathering evidence. Simultaneously, other users gain authority through their own subjectivity (as gurus or 'those who have already been through it'), bestowing their experiential knowledge upon others who see themselves as in some way differently the same. The processes of constructing, negotiating, and delegating authority and expert status are messy and manifold, and the findings chapters of this thesis are dedicated to teasing them out in detail.

4. Methodology

This chapter first gives an overview of the social news site reddit. I then provide an outline of methods of studying online communities, before giving the details of my method, a form of ethnography of online spaces I refer to as a ‘lurking ethnography’. I explain in detail the data I collected and analysed, including ~1000 forum posts and 22 interviews. I go on to explore the challenges and critiques associated with an ethnography in which participation is relatively minimal, countering the argument that this (a) does not constitute ethnography and (b) might not inculcate the requisite understanding for sound knowledge to be produced. This is followed by an exploration of the issue of anonymity and my decision to pseudonymise participants but not alter quotations. The final two sections comprise an exposition of some of the limitations of this method and a statement on my positionality with respect to the communities studied.

A primer on reddit

Reddit (in this thesis and elsewhere styled ‘reddit’ with no capitalisation (ObligatedOstrich, 2015; theGTAKing101, 2016)) is a social media platform often referred to as the ‘front page of the internet’ (Singer et al., 2014). According to its own FAQ section, reddit is

‘A source for what’s new and popular on the web,’ where ‘users like you provide all of the content and decide, through voting, what’s good and what’s junk. Links that receive community approval bubble up towards #1, so the front page is constantly in motion and (hopefully) filled with fresh, interesting links.²⁸

The figure below shows the front page of reddit as encountered by an unregistered user.²⁹ The blue hyperlinks direct the user to external websites, facilitating instant traffic between reddit and the wider internet. There is no way to post directly to the front page; rather, users post links to content (or ‘self’ posts, usually text they have written themselves) to particular subreddits (e.g.

²⁸ https://www.reddit.com/wiki/faq#wiki_what_is_reddit.3E

²⁹ Note that reddit has changed its appearance since I began this thesis, and so a new user today would see something that looks quite different. As all of the data collection for this project took place on the ‘old’ reddit (which is still accessible using links formatted ‘old.reddit.com’, and is still used by many experienced users) the analysis provided here is oriented towards that format.

r/worldnews, r/funny, r/todayilearned) and those ‘submissions’ are voted on by other users. As explained further below, the ‘hottest’ or most popular new posts feature on the front page of the site. Websites which are linked to from the front page of reddit receive a large amount of traffic, due to the number of users the site attracts.³⁰

The ‘upvote’ is the basic unit of audience approval on reddit (Reddit, 2016a). Upon opening the front page of either reddit or a particular subreddit, users are greeted by ‘hot’ posts, ranked by an algorithm which utilises a function of how old the post is and how many upvotes it has received. Comments on submissions are displayed by default in order of the number of upvotes they have received,³¹ and comments which have a net negative score (from upvotes and downvotes) are at risk of being hidden from users by default. This means that voting has a strong effect upon the kinds of content that users see during their time browsing and contributing to reddit. In order to vote, users must first register an account. This grants them the ability to vote on posts and comments in all subreddits.³² This, in turn, allows them to influence the most visible content on the site, as well as expressing their opinion on particular contributions. The totality of upvotes and downvotes a user has received gives them a score that is displayed on their profile, called their ‘karma’.³³ Many users care significantly about their karma, and accusations that users are recycling old content or lying in their comments in order to garner what are often called ‘invisible internet points’ are frequent, with the recipient of the accusation often labelled a ‘karma whore’.

Key affordances of reddit include the karma system, the persistence and cross-applicability of user accounts, the ‘aggregation of material across subreddits, [and] ease of subreddit and user account creation’ (Massanari, 2017). When a user creates a profile, this account persists across all subreddits. This means that the same account can be used to post on r/fitness, r/paleo,

³⁰ As of November 2016, monthly pageviews were around 8 billion, and 25 million votes were cast per day (Smith, 2014). Smaller sites which are linked from Reddit have been known to crash from the sudden upsurge in traffic they receive, in a phenomenon colloquially known as the “Reddit hug of death” or the “Slashdot effect” (Raymond, 2003).

³¹ This can be tweaked by moderators of individual subreddits, who may choose to prioritise ‘new’ comments or ‘controversial’ comments (those which have received a large number of both upvotes and downvotes).

³² There are some exceptions to this, including ‘private’ or invite-only subreddits, and subreddits where one must be a subscriber to vote.

³³ So named because good content is supposed to be rewarded, and poor content punished.

r/popping and r/explainlikeimfive. It also means that their entire posting history (with the exception of any deleted comments or links) can be viewed by anyone who is interested. Further, since all posts and comments can be voted upon, and these scores persist over time, the popularity of individual posts in their history can be gauged. This allows individual users' records to be dissected, but moreover it allows users' histories to be leveraged as a means of attributing or denying authority, legitimacy, or expert status. For example, a user who posts in the r/feminism subreddit with a question that may seem well-intentioned on surface may find themselves in trouble if another user finds that their post history includes a significant number of contributions to r/feminismiscancer. This is facilitated by the fact that post histories can be sorted in the same way on the site as a whole.³⁴

³⁴ The default sorting method for submitted posts on reddit is by 'hot*', which is a function of the post's age and number of upvotes. Alternative sorting mechanisms are 'new', which displays the newest submissions to that subreddit; 'top', which sorts by total number of upvotes; and 'controversial', which displays posts which have a large number of both up and downvotes, leaving them with a (close to) neutral score. In addition to this, one can filter so that only posts from a particular time period appear: this can be restricted to 'last 24 hours', 'past week', 'past month', 'past year' and 'all time'.

The search function on reddit allows one to search for submitted content (but not comments). This search operates in a very similar way to a standard search engine, with specific operators allowing one to delimit the search by title, author, subreddit, URL (the website's address), site (the domain of the submitted URL), self-posts (including or excluding posts which do not link to a particular site, but which are instead more of a standard "forum" format, containing only text from the author – though they may link to other websites within this text), selftext (searching the contents of a self-post, which can be useful in forums which have a large amount of text-heavy posts like /r/fitness or /r/paleo), and some less relevant operators.

The search function is limited in that it does not allow individuals to search for users' comments (though there are tools external to reddit which could allow for this). Whilst it is possible to search for the submissions made by an individual user (and to filter them with the operators above), the same cannot be done for the comments they have made. The only inbuilt method by which comments can be searched is to view a user's profile and sort the comments by "top", "new", "hot" or "controversial", and to look through them "by hand" (though obviously one can use a browser's inbuilt search functions in order to do this).

*N.B This is no longer the case since reddit's recent redesign, but it was the case for the duration of my data collection period. The new default sorting method is 'best', which weights absolute numbers of upvotes less heavily than 'hot', and instead prioritises upvote:downvote ratio.

Subreddits, which are individual communities usually centred around a particular theme, can easily be created, with the founding user serving as a moderator by default. From there, they can appoint additional moderators. Moderators have the capacity to set the rules of the subreddit, delete posts, ban users, ‘pin’ posts to the top of the subreddit, create and maintain FAQ sections, and write a ‘sidebar’ for the subreddit which often includes links to related subreddits and information about the subreddit’s rules, philosophy, and background. Users can ‘subscribe’ to a subreddit to have posts from it appear on their front page. Many users will subscribe to a subreddit but never vote or post, meaning that subreddits can accrue many subscribers without necessarily seeing a corresponding uptick in activity. A good example of this is *r/paleo*, which had nearly 100,000 subscribers when I began data collection but averaged about half a dozen submissions a day; *r/nootropics* in contrast had a similar number of subscribers but averaged a far greater number of posts. This is accounted for in part by the number of users who subscribe during a popular period for a subreddit (for example, the paleo diet had a surge in popularity in the early 2010s) and then never unsubscribe, or whose accounts now lie dormant.

Reddit accounts are pseudonymous: they do not require users to provide a ‘real name’ in order to be created, and reddit itself attempts to avoid having to disclose identifying information to authorities about users whenever possible (reddit, 2019a). Users can consequently post or share things they might otherwise not disclose, and there is a noticeable culture of giving details about one’s life or opinions that may otherwise be considered private. Some users are still concerned about having their more private admissions traced back to them (perhaps through ‘real life’ friends or family who might see their reddit account or know their username, or who could identify them from the information along with their post history). Consequently, there is also a long tradition of ‘throwaway’ accounts created to post on a particular thread or in a specific subreddit. Additionally, ‘sockpuppet’ accounts are a well-known phenomenon in which users will create an account to bring into conversation with themselves (whilst ostensibly being a different person), using that account to argue with their own, present unpalatable views, and so on. This is one of the many issues that goes along with the ease of account creation and pseudonymity. A common instantiation of this in *r/nootropics*, for example, is when representatives of nootropics vendors post ‘reviews’ of products from those vendors whilst pretending that they are simply satisfied customers – a practice known as ‘astroturfing’. This creates significant problems with trust, which are explored along with many of the other issues created by reddit’s affordances in Chapter 5 which deals with *platform dialectics*.

The screenshot shows the Reddit front page with the following elements:

- Navigation Tabs:** hot, new, rising, controversial, top, gilded, wiki, promoted, show images (13)
- Post List (Top 10):**
 - 7285:** OnePlus 3T, the best smartphone, with a headphone jack. Buy yours from £399! (oneplus.net) promoted by onepius_uk
 - 9723:** TL; Alan Rickman had to fall 25ft into an airbag for his death scene in Die Hard. The plan was for the stuntman to drop Rickman on the count of 3. However, the director secretly had the stuntman drop Rickman after a count of 1. Because of this, Rickman's reaction in the film is completely genuine. (sploid.gizmodo.com) submitted 8 hours ago by dillonbecker 413 comments share [1+4]
 - 29,01k:** Bandwagon fans (reddit.it) submitted 9 hours ago by aig331 907 comments share [1+4]
 - 10,21k:** \$180 for a "text book" that came as a stack of paper I had to buy a three ring binder for. Economics lesson one: college is a scam (reddit.it) submitted 9 hours ago by Mhd0331 970 comments share [1+4]
 - 19,51k:** [Skylrim] I got you now Dragon... huh? (gfy.cat.com) submitted 10 hours ago by SoreFink 538 comments share [1+4]
 - 13,41k:** John Scopes: The first teacher to challenge the ban on teaching evolution in American schools, 1925 (imgur.com) submitted 11 hours ago by Supermarty 586 comments share [1+4]
 - 3296:** LPT : If you want to browse a site that requires login (e.g. WSJ) copy paste the link to https://archive.org/web/ to read (Productivity) (self.LifeProTps) submitted 7 hours ago by qatrain 103 comments share
 - 31,91k:** Peeling a cucumber "Joe Sushi" style using metal rods to guide the knife and slice the cumber into a flat sheet, which is easier to julienne cut. (imgur.com) submitted 12 hours ago by rribbittrabbok 986 comments share [1+4]
 - 2002:** An American biker decides to travel the world... (Long) (self.Jokes) submitted 5 hours ago - 0 by eodgarthone 131 comments share
 - 14,41k:** Aurora over Finnish Lapland, New Years Eve [OC] [2048x1365] (imgur.com) submitted 12 hours ago by fedrysian 226 comments share [1+4]
- Search and Login:** Search bar, "Want to join? Log in or sign up in seconds." | English | Login/Sign up form with fields for username, password, and remember me.
- Community Widgets:** "Submit a new link" and "Submit a new text post" buttons, and a "daily reddit gold goal" progress bar showing 229/6.

Figure 4the front page of Reddit at 14:10 on Monday 16th January 2017

Reddit is a space which bears some significant similarities to early Usenet groups and message boards, in that most of the interaction between users is primarily text-based, users tend to hold anonymous accounts, there are ‘public goods’ such as FAQs created which attempt to lay out the norms of the group for newcomers (Kollock, 1999), and interactions tend to focus on specific interests with a bent towards the ‘nerdy’ (Massanari, 2013). In addition, its volunteer moderator force is similar to the kind of moderation often present on message boards and forums (Matias, 2016, 2015), though reddit’s affordances have also facilitated the rise of a relatively small set of ‘power users’ who often moderate a very large number of subreddits and wield significant power across the site as a whole. It also resembles contemporary social media spaces, positioning itself as a ‘platform’ on which content is hosted (Gillespie, 2010), utilising sorting algorithms to automate what kind of content is surfaced (Beer, 2009; Massanari, 2017), and relying upon advertisements as a primary means of deriving income as a profitable entity rather than an amateur interest group (as message boards often tend to be). Reddit has been subject to limited study, though this is rapidly changing as it grows and comes into the spotlight of academics and the media, particularly after its involvement in a number of highly covered events (Brandom, 2018; Massanari, 2017; Shontell, 2013). Researchers in the social sciences have used ethnographic methods to gain insight into the site as a whole (Massanari, 2015), utilised quantitative and computational methods to understand how hate speech spreads (Chandrasekharan et al., 2017; Squirrell, 2017a, 2017b), analysed specific subreddits using qualitative methods (Gilbert, 2018; Van Valkenburgh, 2018), and considered the labour of reddit’s moderators through interviews (Matias, 2016, 2015). This thesis utilises some of these same techniques with the aim of illuminating particular aspects of interaction in two subreddits, r/paleo and r/nootropics, which in turn should elucidate our understandings both of other online self-improvement communities and of interactions on reddit more generally.

Researching online communities

Research on online communities has taken a multitude of forms and focusses since the 1990s. Early research often focussed on the question of *difference* – to what extent online spaces can be said to constitute ‘communities’ in the way we have historically thought of them (Baym, 1998, 1999; Donath, 1999; Jones, 1998b). Quantitative or computational approaches are now common, including those that employ ‘digital methods’: using the characteristics of a platform to study it, rather than attempting to adapt ‘traditional’ methods such as interviews or discourse analysis (Highfield and Leaver, 2016; Rogers, 2013). One of the major issues with studies which attempt

to take a ‘high-level’ view (usually mediated by quantitative and/or computational methods) of online communities is that they risk sacrificing a ‘deep’ understanding of the nuances of cultures and subcultures in exchange for having a large dataset or having the capacity to extrapolate across a greater number of spaces. However, there is a long and rich history of ethnographic research of both online communities and virtual worlds (e.g. Beaulieu, 2005; Boellstorff et al., 2012; Coleman, 2010; Hine, 2015, 2008), often characterised by the researcher having some extant interest or involvement in the community they are studying (Gatson and Zweerink, 2004). Online communities often have complex histories, vocabularies, and norms which can only be properly understood (to the point of being able to write about them with care and consideration) through long-term exposure.

‘Lurking ethnography’ – methodological details

I refer to my overarching method as a ‘lurking ethnography’: a set of methods including discourse analysis and interviews, supplemented with some computational visualisation, in order to gain a full and thorough understanding of the nature of authority and expertise in the two communities I studied.

Ethnographies of online spaces and communities have variously been called ‘virtual’, ‘digital’, or ‘online’ ethnographies (Gatson and Zweerink, 2004; Hine, 2008; Pink, 2015). What they have in common – and where they diverge from ethnographies of physical communities – is that they cover a group of spatially dispersed people who in some way conceive of themselves as an interconnected entity (Olwig, 2003). This spatial dispersion is twofold: users are not geographically co-located, and they also consume media from and participate in multiple areas of the internet (Büscher and Urry, 2009). Consequently, the digital ethnographer must not only visit the centralised meeting space itself (whether it be a message board, game world, chatroom, or in this case a subreddit) but read and watch the kinds of materials and videos that community participants consume. This is facilitated by the hyperlinked nature of the internet, rendering it possible to access immediately and (usually) unproblematically the objects of discussion (Beaulieu, 2005; Beaulieu and Simakova, 2006). As such the community can be understood not just as a single website, but as a contextual and contextualising phenomenon (Hine, 2015).

I chose to study two communities on reddit, beginning with r/paleo and later expanding to include r/nootropics, having reached thematic saturation on the former earlier than expected. I

chose to begin with r/paleo after initially considering a similar community, r/keto. I wanted to focus on a community concerned with diet and nutrition due to the contested nature of expertise and authority in these spaces, as well as the relative dearth of accepted high-quality evidence providing desiderata on what one ought to aim for or how one ought to go about it, in terms of diet. I first considered r/keto, which concerns the *ketogenic* diet. This diet bears some similarities to paleo and is currently a more popular way of eating for weight loss. I decided against studying this community on the basis that there did not appear to be significant depth and breadth in the kinds of discussions being had, with most discourse revolving around the efficacy of the diet for weight loss. By contrast, r/paleo had significantly more theoretical discussion of the philosophical and scientific underpinnings of the paleolithic diet and its variants. In addition, there was greater diversity of opinion on the merits of techniques such as self-tracking, self-experimentation, and *n-of-1* experiments. Consequently, r/paleo presented significant opportunities for understanding the nature of expertise and authority in a nutrition-focused community. Additionally, there was some discussion of paleo's underpinning principle of evolutionary nutrition in the social scientific literature, providing some foundation for further research.

As previously stated, I reached thematic saturation on r/paleo significantly earlier than anticipated. In practical terms this meant that very few new threads were yielding fresh insights into the construction and interplay of authority and expertise in the community. There were three possibilities for action at this point. First, I could end the study early – rejected due to the substantial period of time I had remaining in my studies, as well as the potential contributions to knowledge that could be made through further study. Second, I could continue to work on the paleo community elsewhere, or seek out a significantly larger interview sample than the set I currently had. This would likely have added depth and nuance to my understanding of paleo and its practitioners and adherents. However, I chose not to take this course of action. While contributing to social scientific understanding of this way of eating (and online nutrition communities) is a substantive aim of this thesis, the primary aim of the project has always been to contribute to knowledge about the construction and mobilisation of authority and expertise in online communities. Nutrition communities are an interesting site for the enactment of these discourses, but are not the only site. Consequently, I chose the third option, which was to expand the study to a second case study community. In choosing such a community, it was important to me to keep a number of important variables constant (e.g. the internet platform, focus on modifications to the self that weren't strictly medical, and contested nature of

knowledge in the field) such that close comparisons could be made. However, the focus needed to move substantively away from nutrition in order to be able to make claims about authority and expertise in online spaces that were not solely restricted in principle to diet and nutrition communities. This latter consideration removed from contention r/keto, the community I had initially scoped for research when I began this project.

r/nootropics has a substantive focus on modification of the self, operating in an area where evidence was restricted in both availability and quality. It is located on reddit and has a similar number of subscribers to r/paleo (though it has greater activity, an issue explored in methodological terms below). However, its focus is on different kinds of self-modification and self-improvement, and the community has different dynamics in terms of how users interact with evidence, each other, and with the moderation team. As such it provided an opportunity to expand the remit of the argument I could make about authority and expertise in online spaces. Nevertheless, the data from observation alone can only justify the most robust conclusions with respect to the construction and interplay of authority and expertise in self-improvement communities on Reddit. As variables are altered (e.g. the site of discussion, the subject, the composition of users by background) the applicability of the analysis and conclusions of this thesis weakens accordingly.

An additional substantive consideration with respect to choice of case studies was the gender composition of the chosen sites. As reddit is pseudonymous there is no way to know the precise gender composition of its userbase. The best estimate available comes from an analysis of users' *flair* in a variety of subreddits in which they posted (bburky, 2017a, 2017b). The author of the study then calculated the gender ratio of different subreddits from this data. While it is imperfect, it gives indicative results that are useful for the purposes of this thesis. The data from this work indicates that r/paleo is around 53% male, 47% female³⁵; by contrast, r/nootropics is 82% male, 18% female³⁶. As a baseline comparison, the largest subreddits (including r/AskReddit, r/funny, r/pics, and r/gaming) vary between 63% male (for r/AskReddit) and 82% male (for r/gaming). As such, r/nootropics is at the high end of normal for male representation, which tends to be the case for subreddits about 'geeky' subjects such as science (r/science is 76% male) and technology. r/paleo has significantly higher female representation

³⁵ Based on a sample of 2,463 male and 2,220 female users.

³⁶ Based on a sample of 1,743 male and 386 female users.

than most subreddits, including r/fitness (75% male, perhaps explained by its predominantly weightlifting-focussed content). It has a similar gender composition to r/keto (55% male) and r/vegan (52% male), two other popular subreddits dedicated to specific ways of eating. Given that reddit is operating from a baseline of male domination by numbers, it is instructive to consider the potential effects of the composition of the two subreddits upon the discourse that happens within them. Their divergent demographic makeup facilitates an understanding of these differences. While this thesis is not focussed on gender (and to give gender a thorough treatment would require the addition of substantial further material that space and time constraints prevent in this iteration), providing this information should give the reader some ability to make their own inferences about possible influences upon the discursive environments of the two subreddits.

In accordance with advice in the methods literature, I chose to engage in an initial period of lurking (observing and reading the forum without commenting or posting) in order to better understand the norms of the community (Beaulieu, 2004). I first learned the underlying theory of the community through reading both academic analysis of their beliefs (Knight, 2015, 2011, 2008) and the books they themselves consider essential reading (Cordain, 2010; Sisson, 2012; Wolf, 2010). My observation of the subreddit began in each instance with reading all the material featured on the front page of each subreddit: its 'stickied' posts (which were pinned to the top of the page), its rules, its FAQs, and its posts aimed at newcomers looking to get to grips with the community. The aim was not only to understand the general framework within which social interactions take place, but also to emulate the experience of a new initiate into the community responding to the general expectation to do one's due diligence before engaging in earnest. After this, I read and coded the top upvoted posts in the history of the subreddit for both subreddits (32 posts in r/paleo, 33 in r/nootropics). For r/paleo I also read and coded all the top upvoted posts from the last year (May 2016 – April 2017, 28 posts), and the last month (March-April 2017, 11 posts). These posts often contained insights into significant events in the history of the community, as well as long and varied conversations within the comment sections. For example, the most upvoted posts in r/nootropics often revolved around questions of supplement quality, such as multiple incidents in which nootropics users had taken mislabelled supplements and been hospitalised. This shaped the culture of the subreddit, giving rise to schemes in which users donated to a central fund to send off samples of supplements to labs for purity testing, as well as inculcating a culture of distrust around the quality of nootropics provided by various suppliers.

The next step was to read and code a significant number of posts, taking some themes that had emerged in the preliminary reading as well as looking for new themes related to authority and expertise in the comment sections of each post. In addition to reading the posts and comments themselves, I read articles and watched videos linked to in the posts in order to gain an understanding of the kind of material that was given credence. I spent six months reading posts in r/paleo, and approximately three months in r/nootropics. This shorter period for r/nootropics was justified by my familiarity with the themes of self-improvement communities on reddit from my first observation of r/paleo. In addition, r/nootropics was significantly more active than r/paleo, rendering the method I employed in the first context (reading and coding, at least initially, every post that came through for a six month period) impractical, as reading, coding and analysing twenty or more posts per day for six months would have been both time-consuming and unlikely to yield any further insights. Whilst variations on each theme presented themselves, I immediately found that the divergences were not significant enough to justify another six-month observation period. Instead, I chose to read, code, and analyse the most recent five hundred posts on r/nootropics, approximately the same size as the sample of posts I coded in r/paleo. This proved sufficient to reach thematic saturation (Morse, 2015) after which I solicited from the community a dozen interviews, two more than I had from r/paleo.

After a period of observing the community where I took a grounded theory approach to coding and analysing comments for themes relevant to authority, I posted on each forum explaining my work and soliciting interviews. I also sent messages to multiple moderators of each forum (two of them agreed to be interviewed for r/paleo; none replied for r/nootropics). In the posts, I explained my research and the observation I had already conducted and solicited interview participants. I received an almost universally positive response from both communities.

I engaged in ten interviews with r/paleo users (including two moderators) and twelve r/nootropics users. A table of interviewees can be found below. These emails took place over a period of several weeks, using asynchronous communication over email and reddit private messaging. Interviews took a semi-structured format (schedules available in Appendix A). I had a list of questions to send to each user, but in order to prevent them from being overwhelmed I small sets of questions in each email. This often meant that users would respond deeply and comprehensively to a single question, but that their answer would also overlap with or lead directly in to another question. I also asked follow-up questions, trying to probe into why respondents believed particular things. Some communications were lengthy, with transcripts

coming out at over 10,000 words; others were brief and not particularly enlightening. A list of questions that I sent to users of r/paleo and r/nootropics is included in the appendix, along with the text of the original post soliciting interviews I made in r/paleo. It is worth noting that I deviated from this format significantly in some instances, particularly for the moderators of r/paleo. The questions were designed to probe into various themes that had emerged from my observation, and helped to corroborate my existing conception of phenomena, or else to clarify or show how my understanding might be incomplete. Some questions did not elicit the kind of responses I was looking for, causing me to issue clarifications or change their phrasing for subsequent interviews.

To briefly comment on the demographic breakdown of interviewees, it is worth noting that the gender breakdown of the two sets of participants broadly reflects the comparative composition of the two subreddits. That is, r/paleo has a greater proportion of female interviewees than r/nootropics, and r/paleo has a greater proportion of female users than r/nootropics. The age and geographic breakdown is broadly representative of reddit as a whole, with the majority of users in the 20-40 age bracket and holding an undergraduate degree or higher. While some subreddits may skew younger than this sampling, the breakdown below is reflective of diet, nutrition, and self-improvement as subjects that are primarily the interests of adults. North America is the dominant geographic region, and this is also reflective of reddit as a whole. It is worth noting that a consequence of this is that North American attitudes towards diet and drugs are likely to permeate the discourse of the two subreddits, as well as the interviews. For example, many users of r/nootropics have previously been prescribed Adderall, which is the drug of choice for medicating Attention Deficit Hyperactivity Disorder (ADHD) in the United States. Similarly, there is an emphasis on 'grass-fed beef' as a key part of the paleo diet which requires a higher financial outlay for adherents than standard beef (which is fed on grains in the US). Grass-feeding is the norm for beef in Ireland, for example, and there are many parts of the world where beef (or meat in general) may not be a viable option for consumption as a staple part of a diet. The dominance of graduates amongst these two subreddits also colours the discourses that take place on them (and in interviews), and readers should bear this in mind when interpreting the analysis below, as I have in producing it.

A further important clarification to make is regarding the balance I struck between observations of the communities themselves and conversations with interviewees in developing the different aspects of the argument I make in this thesis. Chronologically, my order of research was:

1. Observation of r/paleo
2. Interviews with r/paleo participants, overlapping with
3. Observation of r/nootropics
4. Interviews with r/nootropics participants

Consequently, the basic framework of my argument was developed during the first of these stages, the observation of r/paleo. I primarily used the interviews to corroborate, challenge, and nuance my existing interpretations of discourses in r/paleo and r/nootropics. I took a relatively well-developed framework of authority and expertise with me when I began my observation of r/nootropics, and a lack of significant dissonance between the two subreddits was partly responsible for this observation period being shorter than that of r/paleo. Interviews served the additional purpose of facilitating an understanding of how users took their observations of, and participation in, discussions in online communities and internalised these and/or applied them to their everyday lives. This latter kind of finding is not as strongly corroborated as the rest of the findings in the thesis due to the smaller sample with which I worked (only the interviews allowed a window into these behaviours, and not all interviews provided such illumination); however, the findings of the thesis are not solely limited to observation and understanding of how authority and expertise are constructed and negotiated *within* online communities.

Table of interviewees

Pseudonym	Location	Age	Gender	Occupation	Educational Level
PALEO					
AB	USA	32	M	Teacher	Undergraduate
AT	Unknown	Unknown	F	Unknown	Unknown
AK	Unknown	Unknown	F	Unknown	Unknown
BC	Australia	30	M	Election Logistics Systems	Undergraduate
E	Australia	Unknown	M	Administrator	Undergraduate
JS	USA	33	M	Self-Employed	Undergraduate
JR	USA	31	M	Blogger & Athlete	
JU	USA	36	M	Web Developer	Undergraduate
LJ	USA	40	F	Radiologist Software	Undergraduate
SM	USA	42	F	Designer	Postgraduate
NOOTROPICS					
AA	USA Canada (from China)	33	M	Developer Contract Education	Undergraduate
AZ	USA	28	M	Student	Undergraduate
CL	USA	22	M	Student	College Student
EH	Canada	45	M	Doctor	MD
DJ	Canada North America	55	M	Pastor	Postgraduate
IK	USA	22	M	Sales	Undergraduate
IR	USA North America	38	M	Hotel Worker	Undergraduate
KB	USA	26	M	Temp	Postgraduate
KJ	USA North America	Unknown	M	PhD Student	Postgraduate
LE	USA	37	M	Professional	Undergraduate
LI	Canada	34	F	Writer	Undergraduate

OB	Unknown	22	M	Student	College Student
PA	USA	26	M	Security	High School
SE	USA	30s	M	Unemployed	Associate's
SY	USA	20	M	Sales	High School
TH	USA	30	F	Nursing	Undergraduate

Participation and accountability

Texts which describe online ethnography and its theory often emphasise the importance of the *participant* part of ‘participant-observation’. Anthropologists who deal with the virtual are concerned that one cannot truly understand the social relations between people without social immersion (Boellstorff et al., 2012). Other social scientists concern themselves with the ‘accountability’ of the researcher: Christine Hine argues that it is ‘important for ethnographers to be immersed within research settings because this places them in direct contact with the participants in the setting ... [and] this prolonged exposure makes the ethnographer publicly accountable to participants for their actions: ‘getting it wrong’ becomes a public event, and the ethnographer learns from the experience of fitting in, or not, as events unfold’ (Hine, 2015). There are further, more particular concerns articulated about the ability of ethnographers to establish rapport with community members in the absence of prolonged and consistent immersion. Mason (1996) argued in the 1990s that the only way to access the significant chunk of community interaction that is ‘back-channel’ (i.e. over private messages, email, etc.) is to establish an identity in the community, and that this is therefore vital. Orgad (2005) also contends that interviewees’ candour is likely to depend upon the ethnographer’s pre-existing rapport with them.

In a way that is reminiscent of the argument made by Collins and Evans’ (2007) conception of tacit knowledge (Collins, 2010; Polanyi, 1958) gained through social immersion as the *sine qua non* of understanding, the worry is that misunderstandings may arise which cannot be rectified without prolonged interaction with group members. The worst outcome of this is that research is produced which misrepresents the community and leads to harm of some kind accruing to them. The concern, then, is *epistemic* insofar as the worry is that researchers will produce work that is epistemically unsound if they do not expose themselves to the community. This epistemic concern tracks an underlying ethical concern about misrepresentation.

Coming from the ‘opposite’ end of this methodological issue are Gatson and Zweerink (2004) who are concerned with the appropriate distance between the ethnographer and their site or subjects. They write as potential ‘natives’ of the community they subject to academic analysis, experiencing similar issues surrounding Geertz’s concepts of ‘native’, ‘experience-near’, and ‘experience-distant’ (Geertz, 2017, 1985). Ethnography’s ‘characteristic intellectual movement’ is ‘a continuous dialectical tacking between the most local of local detail and the most global of global structure in such a way as to bring them into simultaneous view’. The argument, then, is that occupying a position too distant from the ‘most local of local detail’ prevents one not only from being able to gain an understanding of the community on its own terms, but also from seeing the bigger picture and being able to link one’s observations of the community to observations about the global. You have to ‘get the seat of your pants dirty’ (Paccagnella, 1997) in order to gain this understanding. Otherwise, it is not ethnography – it is just discourse analysis, or content analysis, or a collection of methods bundled together with some other label.

The first concern, then, is about *authenticity*. The argument goes that ethnographic knowledge hinges upon close participant-observation because ethnography itself hinges on the ability to see the world as it is seen by participants in the communities we study and to relay and articulate that worldview. Failing to participate as community members do blocks the researcher from accessing that worldview in an authentic way. My response to this argument is that if this is the case, then ethnographers of online communities participate *too much*. Online spaces as a whole are populated primarily by people who watch and never post. Reddit is no exception to this: posts can have hundreds of upvotes and only a handful of comments; likewise, there can be dozens of users browsing a subreddit at any given time with nobody submitting or commenting anything. Critically, there is an argument to be made that lurking gives a more ‘authentic’ representation of the experience of the majority of users of the community, as the ‘1%’ rule (or 90:9:1) as applied to reddit suggests that 90% of users are simply viewing content, with 9% voting on it, and only 1% actively commenting and submitting new content (Hargittai and Walejko, 2008). The most ‘authentic’ emulation of the average experience of reddit (or most other forums) is one in which the user just watches and does nothing. This, though, is clearly insufficient to grant the ethnographer the opportunity to test their knowledge for gaps or misunderstandings. That is, the researcher must at least be able to ‘talk the talk’ of the community they have studied in order to be much use in articulating and relaying the worldview of that community (if that is indeed the aim of ethnography). With the authenticity concern

allayed, we can move to the argument that *understanding* is what is depleted when one chooses to lurk rather than post.

Engagement with the community in some form is in my view necessary to gain the kind of understanding that the participationists desire. However, this understanding does not (again in my view) have to come from consistent posting and commenting. Interviewing community participants (particularly experienced users) provides ample opportunity for ‘getting it wrong’ in the generative way Christine Hine describes. This was my experience with the interviews I conducted, as well as the posts soliciting interviews I submitted to r/paleo and r/nootropics. I was challenged in multiple ways by multiple users, some of whom argued that I was misunderstanding some central point of their worldview. In most of these instances the misunderstanding was generated by miscommunication, though in others there was a genuine disagreement over philosophy or practice.

Regarding the concern that ethnographers who do not actively participate in their communities and establish a coherent and public identity would have trouble soliciting and speaking to interviewees, I can only state that I encountered no such issues. While participants varied in their activity, responsiveness, level of candour, and articulacy, many of them were happy to talk about deep and personal parts of their lives. There is a secondary concern here that email interviews are more likely to produce less spontaneous and more ‘socially desirable’ answers (Joinson, 2005). The first and perhaps best response to this is that all interviews are necessarily socially situated, and the determining factor in whether they are generative in producing new knowledge is the skill of the researcher in mitigating for the particular biases and idiosyncrasies of any given method. However, I think it is possible to go further and state the positive benefits of this kind of interview. Asynchronous digital interviews provide potential for deep answers (James and Busher, 2006) which I felt was fulfilled, particularly as a lack of time pressure meant that respondents were often willing to answer under the implicit understanding that I was not trying to ‘catch them out’ through tricky lines of questioning. Some interviews lasted several weeks and produced transcript documents over 10,000 words in length. Moreover, respondents were often more comfortable with a text-based interview than one which asked them to speak to me over the phone or on video. The community they had been drawn from is text-based, and many of them were habituated to writing out long comments, which meant that this was simply the means of communication that they were most comfortable engaging in.

The ‘accountability’ that Hine also describes as desirable (if not vital) to the ethnographic project is also in no short supply: I stated and explained my research publicly, in posts that received significant numbers of replies. While I have not maintained a consistent research blog (see Wakeford and Cohen, 2008), I am active and contactable on many forms of social media, and I openly speak about my research on most of them. Consequently, if users took issue with the research I was conducting, they had many opportunities to let me know. None have done so to date (save for those concerned I would publish sensationalist or misleading articles about their community in journalistic outlets, which I have not done). I must, however, await response from users to the publication of articles from my PhD (which I have promised to circulate to interviewees) before I can say for certain that no users have serious objections to my research.

The ethics of anonymity

The main ethical concern is the question of (and protocols for) anonymity. For interviews, this is quite simple: interviewees have been pseudonymised, and any identifying information has been stripped from quotes about and by them. Research was commenced, institutional ethics clearance granted, and data collected prior to the introduction of the General Data Protection Regulation. As such, no additional responsibilities over and above the collection of consent and arrangement for storage and disposal of data are incumbent on the researcher or their organisation.

Ethical concerns regarding non-interviewee participants are more complex. First, a small minority of users expressed concern that I would misrepresent them or bring them into the media spotlight in a way that would hurt them. I reassured them that all interviews would be anonymised, but moreover that I was attempting to take on a position of epistemic relativism which would attempt to understand the world from their perspective rather than taking any position on the truth value of claims they made. This proved sufficient to assuage most doubts, with only one user setting a reminder for themselves to return to my thread in several months to check whether I had written any inflammatory articles. As of a year later, I can confirm I have not.

Users whose posts and interactions were observed and analysed on r/paleo and r/nootropics were in most cases unaware, and consequently have not explicitly consented to their words being published in academic research. However, their posts were (and are) available publicly in forums

which had at least 80,000 subscribers when I began the project and at the time of writing have 130,000 (r/paleo) and 163,000 (r/nootropics). This is emblematic of the lack of clarity about what is considered public and freely usable information and what is considered private on the internet (Snee, 2008). The number of users who will see a post on the forum is far greater than the number who will likely see it in a thesis or peer-reviewed paper (though one can always dream). Consequently, it seems almost self-important to be concerned that publishing a username might have an impact on the life of a redditor. The forums are also *perceived* as public (Markham and Buchanan, 2012: Appendix 1) by redditors, who frequently field questions from identified outsiders (from other subreddits, journalists, and so on) without giving the impression that this is intruding upon a private space.

With that said, consent and impact are not the only concerns worth considering when thinking about anonymising data. The undergirding principle of anonymisation for me as a researcher is whether somebody would feel uncomfortable if they unexpectedly became aware that someone had printed their name or their words. It seems clear that in spite of the claim that reddit is public (and these large forums are particularly so), there are many users who would feel at least some discomfort if they were told that somebody had dissected their words and placed them in an academic journal with their name attached for all to see.

The converse argument, though, is that in their rush to avoid any harm from unexpected identification and attention, researchers have actually done a disservice to users they quote. Specifically, many users put a large amount of time and energy into the comments they make in online forums and may well feel slighted if their words were reproduced elsewhere without proper attribution. As a denizen of the internet with some stake in gaining positive attention (particularly when thinking about research impact!) this argument does seem compelling. However, the purpose of quoting a user in a thesis is not to unequivocally praise them (nor of course is it to criticise them). As such, I am uncertain many redditors would be upset that their name had not been attached to a comment they may not even remember making in a PhD thesis. If they were, there would always be the option to de-anonymise themselves and share the fact that they had been quoted. Conversely, once somebody has been de-anonymised there is little that can be done to restore that condition. My conclusion here is that it should be the decision of users to de-anonymise themselves, rather than the unilateral decision of the researcher. Other than the odd joy of being able to cite someone with a particularly strange

username, there is little to be lost from pseudonymising quotes in this thesis. Consequently, I have done so.

There is one further concern here: pseudonymising usernames may not be enough. As pointed out in the ethical guidelines of the Association of Internet Researchers, there is ‘considerable evidence that even ‘anonymised’ datasets that contain enough personal information can result in individuals being identifiable’ (Markham and Buchanan, 2012: 7). Search engines make it quite difficult to fully anonymise anyone without compromising the integrity of the data: a quote can often be typed into a search engine and the original page found (Hine, 2002). This is particularly true of reddit, which diligent users keep a public (and searchable) archive of going all the way back to 2006. One solution to this is to input any direct quotes into multiple search engines and see if the original page comes up (Steinmetz, 2012), altering the quote if it does. There are two problems with this. The first is that the process is unwieldy, requiring an iterative approach for each and every direct quote. The second is that editing direct quotes, particularly in research that utilises discourse analysis or otherwise analyses the nuances of interactions and words, corrupts the ability of the researcher to accurately analyse those quotes. This leaves us with two options: either stop using direct quotes or use them in their unredacted form. The first is untenable for precisely the reason that discourse analysis is so heavily dependent upon the actual words of participants. The second entails the possibility that an enterprising reader might decide to look up the quote for themselves, leading them to the post and therefore the username of the person quoted. From here we must ask, ‘so what?’ The likely outcomes seem benign. An already pseudonymous user is found and perhaps their post history can be read. I cannot foresee what, how, or why harm would come to them as a result of this. The more likely outcome is a critique of the researcher for taking their words out of their proper context, or for an incorrect inference. As such, based on a model of harm minimisation that balances out the needs of the research with the desire not to harm unwitting participants (Markham and Buchanan, 2012: 10) I have decided not to redact or alter direct quotes in this thesis.

Methodological limitations

As with any piece of research, the methods I have used here have limitations which should be noted with the hope that readers take them into account when assessing the validity and strength of the conclusions I have reached.

Time is a factor that limits this research in multiple ways. The time period in which I analysed each community obviously only gives one slice of their activity (though analysing the top posts through various time periods may have helped mitigate this), and another researcher doing the same project starting today may well find different results. In particular, both subreddits have grown substantially in subscriber counts since my data collection period, and this may have impacted post content and interactions. Reddit has undergone a redesign in the time since my data collection ended, and this is having (and will continue to have) substantive impacts upon user experience, and therefore user interactions.

The interview sample skews white, male, and US-centric. These are the core demographics of r/paleo and r/nootropics and so the sample is likely indicative, but this in itself means that even a cross-community comparison of the construction of authority and expertise cannot take account of gender within the data itself and must instead rely on existing literature (with attendant differences in methods, positionality, disciplinary approach, and so on). My own position as a white man likely elicited different responses from interviewees and users than someone who presented differently would have received.

As explained and justified above, my participation in the community was limited. I argue that this presents a more 'authentic' representation of the experience of the average user (who does not participate much), but other researchers can and will disagree. A researcher who performed the same study but did so with a greater volume of posts in the two communities would likely have yielded different results.

The choice to expand from one community (r/paleo) to two (r/nootropics) was not taken lightly. I recognised that it would be difficult to interweave my analysis in such a way that the nuances of each individual community were not lost whilst also ensuring that a significant comparative component was present. Another researcher might have made the decision, once thematic saturation on r/paleo was reached, to proceed in a different way. They might have simply written up their findings as they were or returned to collect more data from the same subreddit, or solicited more interviews, or chosen a different second case study. I chose r/nootropics on the basis that it provided a significant amount of overlap with r/paleo whilst not being similar to the point of repeating precisely the same themes. Alternatives included r/keto, which would have given a more inter-diet focus; r/fitness, which would have moved towards a more mainstream conception of authority (r/fitness is one of the largest subreddits,

with millions of subscribers); or alternatively an off-reddit community like the anti-vaccination movement, where different modes of authority likely would have presented themselves. Any of these would have been a valid choice, and would have provided rich seams of comparative analysis to mine, but I chose r/nootropics and the result is the thesis as presented.

Finally, the sheer size of the two communities created difficulties of method. r/nootropics could not be studied in the same way as r/paleo, where I had read and coded every single post for six months, because too many posts were coming through each day. Both of them have nearly a decade of history, and whilst computational analysis and conversations with experienced users can yield some understanding of both trends and individual events, there is no substitute for being able to read a large chunk of historic posts. I have attempted to read some of the most significant parts of the history of each subreddit, but due to the imperfections of the reddit search algorithm (which necessarily includes those posts which were made at the most active times in the subreddit's history, due to its reliance on the number of upvotes), it is not always possible to access and understand a representative sample of posts from different periods. All this is to say that my research and its conclusions are contingent and require validation, corroboration, and critique from other sources if they are to mean much at all.

Positionality

It is worth noting my own positions with respect to the communities I have studied. I have spent much of the last eight years of my life (since I was 18) immersed to various degrees in fitness and nutrition culture. I engage in weightlifting as a regular hobby and I have a working knowledge of various kinds of fitness and nutrition cultures. Indeed, one of the things that attracted me to fitness and health-centred communities was the knowledge that acclimating to the jargon and community norms would not be a particularly difficult task. I was also attracted by the knowledge that they were areas fraught with disagreement and epistemic difficulty, as well as the anecdotal observation that the people who seemed to do well as 'gurus' almost always had a glistening six-pack.

I have never followed paleo, nor have I more than casually dabbled in cognitive enhancement. I did find myself, during my research, going through a period in which I semi-consciously attempted to avoid or reduce my grain consumption, and the things I read and discussed have certainly affected both my diet and my beliefs about diet. When I began the research I had the

impression (as a casual observer might) that paleo might be ill-founded, or at the very least that there was not much positively differentiating it from other ways of eating. As I read, my opinions changed. I cannot claim to have a full-fledged dietary philosophy – and nor would I wish that to be the case – but there have certainly been changes in how I view food and nutrition. I became more sceptical of claims about the healthfulness (or otherwise) of saturated fats. Similarly, my conception of ‘classic’ scientific studies and of the capacity of medical doctors to give sound nutritional advice was altered.

To perform an ethnography well, it is as stated above necessary to be able to ‘talk the talk’ of the community which you are attempting to understand. While many of the paleo- and nootropics-specific terms were new to me, my background as both a student of the natural and social sciences and a fitness enthusiast were helpful in providing a firm foundation of knowledge upon which the specialised vocabularies and understandings of the world could be placed.

The data collection period in this thesis was just under a year, but much of my life prior to this present study has been spent engaged in and thinking about online communities that have a self-improvement aspect to them. I have been on reddit since around 2012, reading primarily r/fitness and related communities, and before that I used the internet to gain access to bodybuilding and powerlifting programmes in 2010-11. I witnessed norm changes in these communities as the programmes of choice altered and adapted, and their overall popularity increased, and I have a deep understanding of the history of this kind of community which began long before I started the PhD thesis. Even before I was engaged with reddit and fitness culture, much of my life has been spent participating in online communities and virtual worlds. I began playing multiplayer games and participating in online forums in 2002, when I was 9 years old and used to play multiplayer Starcraft and lie about my age in order to post on the GameFAQs forums for my favourite games. All of this is to say that the level of depth and complexity of online communities, spaces, and worlds is one that can only be appreciated and relayed with both an understanding of how they interconnect, how their norms arise, how their interactions are shaped by the medium and its affordances; and that all of this is best gained through both an immersive research method and a strong background in related spaces.

With all this said, this positionality statement cannot be purely positive. I have biases: towards what sounds scientific but against positivism; against ‘evolutionary’ explanations which seem to me to lean heavily on ‘just-so’ accounts of history; towards the idea that traditional authority

figures might not be worthy of trust, but against ‘alternative medicine’; and so on. I say this not in the hope that doing so will mitigate them or make any interlocuter forgive me them. Instead, I want to lay out in advance that my analysis has been conducted (as all analysis is) from a specific position, influenced by all manner of factors, and that these are some of the most salient issues upon which other researchers might wish to critique my work. I am also a white, British, middle-class man who has spent most of his life in the United Kingdom. I say this with the hope not that this work will be dismissed, but that through criticism it can be made less subject to my own subjectivities.

5. Platform Dialectics

In this first findings chapter I develop the concept of ‘platform dialectics’ to explain the relationships between users and moderators in r/paleo and r/nootropics, as well as the wider reddit community. The dialectic describes a continual tacking back and forth between multiple groups. Moderators have significant power over the design, appearance, and functionality of the subreddits they control. They utilise the tools at their disposal, such as rule-making and the publication of FAQs and other ‘public goods’, in an attempt to bring to fruition their vision of how the community ought to look and function. Users respond to these decisions in ways that are often unexpected and sometimes in conflict with moderators’ aims. The dialectic is mediated by the affordances of reddit as a platform, including its voting system (‘karma’), the persistence of user profiles, and the ease of creation of new subreddits. This dialectic is almost always incomplete, with users and moderators consistently tweaking their behaviour and deployment of affordances in an attempt to achieve aims that may contradict or exist in tension with one another.

Out of the debate between the ‘essentialist’ view of technology and the ‘constructivist’ view - the latter articulated by Grint and Woolgar (1997) as an understanding of technologies as ‘texts’ that can be ‘read’ in a multitude of ways by users, comes the ‘third way’ of affordances, detailed reviews of which are available elsewhere (Bucher and Helmond, 2018; Evans et al., 2017).³⁷ Proponents of the use of affordances as a means of understanding human-technology interactions argue that ‘the range of possibilities for interpretation and action is nowhere near as open for either ‘writers’ or ‘readers’ of the technology as the text metaphor implies,’ and therefore the term ‘affordances’ is more appropriate to describe ‘the technological shaping of sociality’ (Hutchby, 2001). My overarching contention is that the affordances of a website do not contain instructions for their own application or interpretation, and so features are not determinative of user behaviour, but are instead a starting point for a *platform dialectic* between end users and those above them in the site hierarchy who control how affordances are deployed.

³⁷ More detailed discussions of affordances as they pertain to web and social media platforms can be found in e.g. (Barry et al., 2003; boyd, 2010; Bucher and Helmond, 2018; Ellison and Vitak, 2015; Evans et al., 2017, 2017; Graves, 2007)

I begin with a discussion of the ‘voting’ system that underpins the structure and discursive regimes of reddit, looking at both my own case studies and elsewhere to analyse the role votes (and the ‘karma’ they influence) have in users’ delegation of epistemic authority. To elaborate the platform dialectic concept, I explore users’ responses to reddit administrators’ attempts to inculcate an attitude towards voting that prioritises *relevance*, rather than *agreement*. From there I go on to explore the way the voting system becomes a site of boundary work in which the grievances and anxieties of the two communities are revealed. In both places (and across other subreddits) ‘meta’ discussions about the proper use of karma become discussions of the underlying issues in the community, including how they maintain the integrity and quality of their userbase and submissions. I explore the idea of the ‘reddit condition’ to describe users’ perpetual concern that the quality of submissions and comments is decreasing, and that moderators and active users are fighting a losing battle to maintain and improve the signal/noise ratio. Through analysis first of votes’ role in promoting visibility, and then their role in demonstrating agreement and the delegation of authority by invisible users, I explore these anxieties. I show how discussions of ‘proper’ uses of voting bring to light r/paleo’s worries about the degradation of ‘real’ paleo, which in turn meet anxieties about the overly zealous application of the idea of ‘real’ paleo; likewise they illuminate r/nootropics’ concerns about the ‘flooding’ of the subreddit with perceived low-quality experience posts about modafinil, as well as the upvoting of posts which are perceived as exemplifying and encouraging irresponsible use of nootropics for recreational purposes.

Following on from this discussion, the bulk of the chapter then deals with the relationships between end users and the volunteer moderators who do much of the ‘civic labour’ which underpins the reddit experience (Matias, 2016). I delineate three ways in which this relationship is actualised on reddit. First, moderators have particular visions for their communities. I conceptualise attempts to enact these visions through a combination of platform affordances and community norms as exercises in what I call *platform discipline*, in which users may or may not conform to the behavioural expectations of moderators. If they do not, I call this *subversion*, with a recognition that the agentic connotations of this word obscure some of the more passive ways in which users might incidentally thwart moderators’ desires. As a result of subversion, moderators engage in attempts at *re-disciplining* to realise their aims. The examples I analyse fall under two headings. First, I draw on existing literature (e.g. Burnett and Bonnici, 2003) to examine FAQ sections from both communities, illustrating how they set out a worldview serving as a foundation for meaningful discussion. Third, I examine the practice of giving ‘flair’: small

CSS labels that appear next to a user's name whenever they post on a subreddit, indicating the user's status. I look at how the status connoted by flair is up for user interpretation, and how this results in moderators reconsidering how they engage in platform discipline.

Over the course of this chapter, I draw primarily on data from r/paleo and r/nootropics, but I also include examples from other subreddits including r/AskHistorians. I do this to illustrate how volunteer moderators seek to build an environment that is 'trust-tropic': that is, one in which users feel that the information they are reading is likely to be on-topic, reliable, and not falsified by actors with vested interests in their beliefs and actions taking a particular form.

Building relationships into affordances

Existing analyses of reddit's affordances focus on its ease of account creation, its karma system, and the aggregation of material across subreddits (Massanari, 2017: 330). I also explore karma and reddit's voting system - which is not unique (for example, see Halavais, 2009) - but with further consideration of the effects of users in 'lurking mode' upon those in 'posting mode' (Baym, 1999: Introduction), as well as users' subversion of moderators' attempts to impose a specific vision of the function of karma. Moreover, I discuss moderators' use of features that can be easily reconfigured and redeployed without touching the overall integrity of the platform, including CSS modifications made to users' display names, and the ability to write and display prominently a FAQ page (Burnett and Bonnici, 2003).

Massanari emphasises the 'importance of considering how the relationship between people and technology is productive and co-constitutive' (2015: 169). This chapter further explores that relationship - with a focus on knowledge, authority, and expertise - examining the interplay between the *deployment* of technologies with a particular aim, the interpretations users had of those technologies, and the *response* to users' readings by those with the power to re-deploy them. For example, site administrators *aimed* for reddit's voting system to separate posts which contributed to a conversation from those which were irrelevant or unhelpful. This is codified in the notion of 'reddiquette', which indicates how users *ought* to vote (Massanari, 2015: 120). Sometimes, users vote in this way. However, users might *also* 'read' the voting function

differently and use it to signal a dislike for an opinion, or even a certain kind of content.³⁸ One of Massanari's respondents, for example, notes that he is not fond of dogs, and downvotes dog-related content whenever it reaches the front page (*ibid*: 121). The moderators of individual subreddits, though, often want users to vote with particular intentions in mind. As such, they utilise CSS modifications to encourage this. For example, when a user highlights the downvote button on *r/paleo*, a pop-up informs them it is for 'Content that does not contribute to the discussion'. *r/nootropics* does similar, indicating it should be used for 'Inappropriate content!'.

This chapter attempts to deepen our understanding of the specific role played by moderators on reddit, specifically with respect to how they curate and filter content in order to promote the epistemic values of the communities they are custodians of. The extant literature has covered paid content moderators on social media sites (Gillespie, 2018), as well as trained moderators on patient forums (Ziewitz, 2017), and popular media has covered controversies related to content moderation on reddit (Chen, 2012). However, there is little recognition of the quotidian, day-to-day interactions between community users and volunteer moderators in places like reddit. Most users' primary interactions with power on reddit are through the moderators of the subreddits they frequent: they might flag a post, have their comment deleted, or have a submission marked as spam or not accepted. Reddit's administrators cede significant power to community moderators – who either created a subreddit or were subsequently drafted in – and they can do as they wish so long as their users do not break site-wide content rules (Matias, 2015). Consequently, there are as many moderation styles as there are subreddits, and this chapter seeks to provide both a high-level analysis of how moderators attempt (successfully or unsuccessfully) to enact their vision for their subreddit, as well as a fine-grained exploration of particular episodes in the moderation of *r/paleo* and *r/nootropics*.

³⁸ It is worth noting here that reddit diverges from many other social media platforms in allowing users to downvote at all. Facebook for example has historically resisted pressure to add a 'dislike' button, for example, on the grounds it would 'sow too much negativity' (Lorenz, 2018). Facebook has however tested a downvote function similar to reddit's on different sets of users from 2018 onwards, though with little indication they currently intend to roll the feature out universally (Griffin, 2018).

The role of karma in belief formation

At the centre of reddit's structure is the 'karma' system. As Massanari writes, 'Redditors can upvote material they find interesting or worthwhile and downvote that which they find off-topic or otherwise uninteresting. Highly upvoted material – both links and comments – appears higher on the site (or subreddit's) front page and thus receives more attention' (2017). The upvote then can be thought of as the basic unit of audience approval. Upon opening the front page of either reddit or a particular subreddit, users are greeted by posts ranked by an algorithm utilising a function of the post's age and net score (upvotes minus downvotes). The same goes for comments on posts, which are by default displayed in order of the number of upvotes they have received. Comments that have a net negative score (from upvotes and downvotes) are at risk of being hidden from users by default. Consequently, voting has a strong effect upon the kinds of content that users see during their time browsing and contributing to reddit. Users have also come to value the 'karma' they gain from having their comments and submissions upvoted (Massanari, 2015). Whilst they frown upon the way other users debase themselves for what are commonly referred to as 'invisible internet points', they will also actively edit their posts to complain when they feel they're being unfairly downvoted, or even delete their posts to avoid the negative effects mass downvoting can have upon their karma. In this section I first expose and explain the nature of the upvote system, demonstrating the platform dialectic between users, moderators, and administrators through an explanation of the practice of 'brigading'. I then go on to explain the many uses and (perceived) abuses of the voting system, before demonstrating the significance this has for belief formation.

Brigading and the platform dialectic

The significance of karma to redditors is well demonstrated by the frequency with which users from one subreddit will 'brigade' a rival subreddit (for example, a user on r/vegan might direct community members to r/paleo), visiting one or more threads and downvoting the comments and submissions *en masse*. It is even better demonstrated by the fact that brigading is against reddit's site-wide rules and may have repercussions for subreddits found to be engaging in it. To prevent brigading, administrators instituted a 'no participation' function for links to threads in other subreddits, where a CSS feature prevents users from being able to vote on the linked post or comments. Users can quite easily delete the part of the link which creates the 'no participation' function and vote away, but the feature still acts as a mild disincentive to brigading

by making the process slightly more problematic. It also functions as a behavioural ‘nudge’, reminding users to be respectful or tactful about how they vote when they visit other subreddits (which are often conceptualised as separate communities). Whilst some users argue this is ‘pointless security theatre’ (user CW), others consider it in the context of the relationship between administrators and moderators. They argue that moderators’ enforcement of an ‘np’³⁹ link rule allows them to signal to admins that their subreddit has a commitment to playing by the rules and ought not to be punished.

This quite messy and complex state of affairs is a good example of the platform dialectic as applied to the relationships between admins and moderators, as well as between moderators and end users. Administrators wish to improve the overall experience of being on reddit and have an interest in reducing the frustration felt by users when their communities are brigaded by others; moderators have an interest in maintaining order and harmony within their community (and preventing their users from being downvoted *en masse* periodically); whilst individual users have no such obligations to the communities they find themselves in. The consequence is that design features are implemented which attempt to move the behaviour of one or more types of actor in particular directions, but this behavioural change is far from predictable. Simply applying a ‘rule’ does not mean that it will be followed in the way that one expects, as reddit’s administrators and moderators have learned over the last decade.

The (ab)uses of karma

Reddit has therefore created an internal ‘like economy’ wherein individuals seek to post content that will garner maximum karma, often tailoring their posts in such a way that they dovetail with the sensibilities of the community (Gerlitz and Helmond, 2013). Unlike traditional message boards, where ‘reputation’ features that act like karma may exist but are often rudimentary and far from ubiquitous, karma is built into reddit’s structure. Users seek karma and (usually) avoid posting anything that might risk being downvoted; they edit or delete their downvoted posts; they post fake stories or images or recycle content for karma; and so on. This is not just because having a high karma score on one’s user profile looks impressive. Whether or not something you post is seen is dictated largely by the amount of upvotes your post can accrue. There is a significant market for ‘bought’ upvotes, with speculation that many of the top posts on reddit on

³⁹ ‘No participation’.

a daily basis perform so well as a result of upvotes which have been purchased, giving them an initial karmic push that helps them get off the ground. Likewise, individual users can have an outsized influence on the visible content in a subreddit if they are willing to hang around the ‘new’ filter for submissions. Votes are ‘weighted’ in the impact they have on visibility, with the first ten counting as much as the next hundred, and so on. The so-called ‘knights of the new’ (Massanari, 2015) then are enormously influential. Perhaps even more impactful are the ‘flavour posters’, who consistently comment on every submission and whose influence can colour the entire atmosphere of a subreddit. An ex-moderator of a subreddit whose atmosphere changed completely states that ‘Flavour posters define the entire narrative of a sub. Flavour posters are generally the *only* people who matter in a small to medium sized sub. And, as a 40K subreddit, TiA had maybe 10 of them. (StezzerLolz, 2015).’ These users ‘control the narrative’ for individual posts. The same ex-moderator attests, ‘So long as I got there first or second, and was vaguely convincing, I could single-handedly sway the general opinion of a 1,000 person comment section.’ This is the case across reddit: within limits, the first handful of comments on a submission will often dominate the discussion and dictate the overall narrative around the post. Consequently, a single person can have an outsized impact on how an entire community perceives submissions. Likewise, a single subreddit can have a large impact on the atmosphere of reddit as a whole, with 1% of subreddits initiating the vast majority of conflicts on reddit (Kumar et al., 2018).

The net impact of all this – the knights of the new, the flavour posters, the brigaders, the casual users, the moderators who delete posts which do not conform to the rules – is complex and diffuse and can only be mapped and understood qualitatively. The discussion of authority in Chapter 3 provides a high-level understanding of how users interact with one another on an epistemic level, whilst Chapters 6 and 7 will map out precisely how individual interactions play out, and how these form part of a wider discourse. Displaying what might be perceived as an understanding of the interplay between affordances and power dynamics that I term the platform dialectic, users are acutely aware of the significance of the algorithm and of karma in a manner consistent with existing work on the everyday understandings of algorithms on other platforms (Beer, 2009; Bucher, 2017). For example, in a contentious r/nootropics thread banning anecdotal posts about modafinil, user EV is attacked for posting a one-word response (‘Agreed.’) to another user, and responds, ‘Hmm, upvote is not strong enough, and reddit’s algorithm for choosing the top posts in a thread depends also on number of answers to those posts, so answering with a 1 word post benefits that post, since it pushes it to the top’ (+17

points). Submissions and comments, then, take on the form of a performance in the Goffmanian sense: users post and comment strategically, writing what they expect will garner them upvotes, and they post in a distinctly ‘reddit voice’. This voice varies by subreddit, but it has characteristic features which cohere with the conception of ‘geek masculinity’ put forward by Massanari (2017: 331-3). They often perform rationality and dispassionate objectivity but slips in this performance are heavily punished through downvoting and further comments criticising the user.

Individual subreddits develop distinct atmospheres, with particular kinds of posts being highly upvoted, begetting more of that kind of post. Likewise, users hungry for karma will comment opinions that agree with the prevailing ‘groupthink’, whilst contrarian users ‘get in early’ to articulate ‘reasonable’ sounding objections to this groupthink and will expect to be upvoted in turn, not because other users necessarily agree with them but because they *sound reasonable*. This kind of dialectic is well-known on reddit and is the subject of multiple subreddits (e.g. r/ShitRedditSays, r/circlebroke) in which users satirise and criticise reddit’s excesses and eccentricities. These subreddits are themselves in turn subject to criticism and satire (from r/SRSsucks or r/circlebroke2), and so the dialectic goes on, a snake eternally eating its own tail and then complaining about it for invisible internet points.

Meta posts as a window into reddit’s ‘soul’

Redditors, then, are acutely aware of what I call the ‘reddit condition’. They consider reddit to be in a state of perpetual decline, fighting losing battles: against a degradation in post quality as subreddits become larger; against a karma system that rewards ‘low effort’ posts and disincentivises genuine engagement and high-quality discourse; against ‘karma-whoring’ and ‘circlejerking’; against capricious moderators drunk on power, and administrators who care solely for reddit’s bottom line. They imagine reddit as an undifferentiated mass of invisible voting users with terrible taste in content. But even their howls of despair at this inescapable condition are tinged with self-awareness, such that posts that complain about the circlejerk are themselves accused of circlejerking, and critiques of simplistic content are themselves subject to the criticism that they are insufficiently nuanced or made in bad faith. On r/paleo specifically, one of the most upvoted posts of all time is a complaint about other users’ attempts to take advantage of the circlejerk. Entitled ‘I ate a non-paleo food and I’m sick upvotes pls’, users took the submission as a cue to comment their own gripes with the community. A selection of comments follows:

TUC 21 points

How about the ‘I have been eating Paleo for two weeks and now I have superpowers’ posts? ... I find myself eyeing that unsubscribe button more and more lately. It’s such a shame that Reddit has taken a way of life that has helped many people and turned it into a circle jerk about who has more grass fed beef in their freezer.

FCK 9 points

I personally am sick of all the “This is my first paleo meal. How did I do?”

You know you did at least ok or you wouldn’t be taking the time to post it to the internet. I am all for food pix. Just put what it is in the title and include the recipe in the comments. “How did I do, What does Reddit think?” ...so freaking annoying.

T40 3 points

Plus one.

What do you people expect in that situation – a grunt of approval? I haven’t followed any threads like that, but do people downvote and/or critique meals that ‘aren’t paleo enough?’

FCK 2 points

I tried to refer someone to r/CircleJerk once and they did not think I was funny.

This subreddit needs a sense of humour.

Perhaps inevitably, some users responded by critiquing the post or defending the behaviour described in the original submission, arguing the offending users’ intentions had been misunderstood:

RTB 65 points

I eat non-paleo food all the time. It doesn’t kill me (though even little bits of gluten will ruin my stomach for a couple of days).

That’s not (IMO) what those posts are about. I think they’re more about sharing your pain and learning experience. Anyone that feels ‘shamed’ by them should probably look at themselves and their own motivations.

MNFN 13 points

Yes. Everyone ‘cheats’ once in a while. Everyone has foods that trigger a negative response in their bodies, and foods they can eat without feeling horrible or loggy afterwards. It’s neat to see if other people have similar reactions to various non-Paleo foods.

And, perhaps most succinctly:

BCN 14 points

This post is an anti circle jerking circle jerk.

This post demonstrates many of the dynamics I have expressed above. The frustration expressed in humorous fashion by the OP taps in to a problem that many people feel is present in the subreddit, attracting upvotes not only because of its subject matter and tone but because it presents an opinion as though it were a minority or contrarian viewpoint (when it must in fact be held by many users in order to be so highly upvoted). The responses that are highly upvoted are a mix of humour and measured comments that attempt to engage in good faith with the outlined problem, pointing out potential logical flaws in the OP's argument. RTB, who critiqued the OP and is also a moderator of r/paleo, also uses the qualifier 'IMO' indicating their analysis is just their own opinion (an example of 'hedging' which is explored in detail in the following two chapters which deal with how users discuss evidence and experience). Karma is perceived as a corrupting influence that nudges users to submit 'low effort' content devoid of value in order to receive upvotes, reducing the signal/noise ratio of the space and causing experienced users to seriously consider leaving the community.

A similarly illuminating example of the reddit condition comes from r/nootropics, where one of the most upvoted posts of all time is again a 'meta' post from October 2017 entitled 'We need to stop this'. An extract from the OP reads:

EDF – 994 points

This sub is becoming a site full of people that recklessly abuse substances and come here to brag about it or to make themselves the centre of attention.

This trend is going to end with someone dead and with nootropics being banned and regulated. ...

This kind of user needs to be stopped and kicked out for both our own good and probably theirs too.

...

I'm not the owner of this sub, so if you think that I'm wrong, downvote me and I will be the one getting out of here. As an act of coherence I think that this is what I must do given the circumstance.

But I still think that we can achieve good things, that we can help each other, that we can improve our mental performance and increase our abilities slowly, subtly and with time.

This is a good opportunity to analyse how posts like this garner status as authoritative. The OP here goes on to link to a number of posts they consider offending articles, demonstrating the importance of citing sources when making claims to authority in subreddits like r/nootropics. Moreover, they engage in a kind of 'blackmail and bond' relationship with the audience (Goodwin, 2001) where they stake their reputation on the salience of their argument, saying 'if

you think that I'm wrong, downvote me and I will be the one getting out of here'. The idea here is that if the audience *does not* downvote the OP then this is a corroboration of their authority to speak on this issue.

This post is demonstrative of anxieties about the corruption of subreddits with posts that appeal to a large undifferentiated mass of redditors whose taste for content is the lowest common denominator. As with r/paleo, where the post touched upon the anxiety that the subreddit was turning into an echo chamber of uncritical pro-paleo proselytization, this post reaches into the deepest issues of r/nootropics. There is a perceived division between those users who wish to improve their cognition 'slowly, subtly and with time' and those who want, in the words of one interviewee, to 'chase the dragon in a socially acceptable way'. In chapter 7 I go on to critique this narrative, but suffice to say it has significant purchase in the community, and influences conversations about what sorts of posts should be valued. Discussions of what counts as a nootropic, what kind of trust is required to participate in nootropics, and whether the subreddit should be a space for casual experimentation, are discussions of what the community is *for*. Simultaneously, they are discussions that reach deep into questions of authority and legitimacy, asking (and sometimes answering) questions about what facilitates the subreddit becoming a space in which firm foundations of knowledge can be built. These discussions are not just about the identity of the subreddit as it pertains to quality of content: they are about how that quality of content (and the people who submit it and vote on it) influences the subreddit's status as a reliable epistemic resource whose pages and users one can comfortably delegate epistemic authority to.

For all the problems karma has, examining a subreddit's history through its most upvoted posts allows users (and researchers) to get a good sense of what makes someone *be listened to* in the space.⁴⁰ The answer, in many instances, is that they passionately but articulately expose and explore some of the hardest issues that the community faces, including those which with time may threaten the integrity of the community itself.

⁴⁰ This mechanism of understanding authority is – I would contend – unique to reddit, as most other social media platforms lack a voting system (even if they have likes, retweets, and so on) and/or a means of sorting through content in this way. Reddit's relatively open API also allows users to manually scrape and analyse data in a manner that cannot be accomplished (at least without violating the terms of service) for platforms including Facebook and Instagram.

The relationship between authority and votes

So far I have talked primarily about *visibility*: how votes affect a post or comment's propensity to be read by others, and the incentive that exists to post in a way that garners upvotes if one has any interest in interacting with other users. But whilst visibility is a pre-requisite for attention, the concept of the platform dialectic indicates that voting also configures the *response* others provide to posts and comments. The very fact that a post or comment has been highly upvoted tends to result both in other users upvoting it and individuals lending it greater credence than they would a post that is sitting on a low number of votes – or worse, has been heavily downvoted. I have found this urge within myself over the many years I have spent using reddit, but a better demonstration comes from the decision taken by moderators of subreddits which tend to be home to contentious discussions (such as r/politics) to hide the scores of all comments, or at least those which have been recently submitted. The idea is to prevent users from voting purely based on the current score of the comment. Other moderators enable 'contest mode', in which comment threads are randomly (and permanently) sorted underneath a submission rather than being ordered by score (or some other specific metric). The measures taken by moderators of large subreddits to prevent bandwagoning suggests the problem is real and substantial. Whilst there is not a linear relationship between score and credence and the relationship cannot be easily mapped, it is worth making some observations.

First, users often upvote or downvote that with which they agree or disagree (as opposed to content that is irrelevant, the 'proper' use envisioned by site administrators and codified in 'reddiquette'). In arguments, users find themselves backed up or undermined by other, lurking users. This is acknowledged even by moderators: in the aforementioned thread about modafinil posts in r/nootropics, a moderator engages in argument with a dissenting user (whose post has since been deleted) by noting, 'As you can see by the upvote ratio, everyone agrees with me.' (10 points, MYSO). In a similar thread where a user asks for the *de facto* ban on modafinil experience posts to be reversed, a moderator (ZC) refers to the previous thread (which was upvoted, as were the comments it contained about removing modafinil posts) as evidence that 'we as a community agreed that the endless experience posts were getting annoying.' The OP (WHCH) of the thread responds to another moderator elsewhere on the thread, arguing that the 93% upvote ratio (as well as the several thousand views) his post had received indicated that this was 'enough to at least warrant a reconsideration of your policies'. Upvotes, in the minds of many

redditors, indicate that other users agree with them. Interestingly, even though moderators explicitly design features into their subreddits to attempt to dissuade users from voting based on agreement (e.g. labelling the vote buttons, explored below), these same moderators both recognise and take advantage of the fact that upvotes can be perceived as indicating agreement. The platform dialectic allows for flexibility in how users respond to the presence or configuration of particular environmental features, and reddit's voting system is one good example of this.

While upvotes tend to beget upvotes and credence, the converse is also a well-noted phenomenon: comments that begin to be downvoted tend to attract more and more downvotes as users 'pile-on' to express their disapproval. For users whose posts are being downvoted, the consequences are several. In addition to the bandwagon effect, other users are less likely to accord a post credence. Worse, the comment will become invisible to many users: one of the settings users can change is the threshold of points below which a comment will be hidden unless they specifically click a button to reveal it. In response, users may edit or delete their comments. If something is heavily downvoted, users often feel attacked, and the subsequent negative attention and reduction in karma can trigger them to opt-out of the discussion entirely. Discussion of downvoting is often fraught, with users angrily inquiring who has been downvoting them and others (often those participating in dialogue with the first user) requesting that onlookers refrain from instinctively downvoting. As with other meta-discussions about voting and reddit's structures, these conversations illuminate some of the central tensions within communities. This is true across subreddits. In r/nootropics discussions of voting shed light on anxieties about a downturn in quality of posts as well as encouraging potentially reckless behaviour, illustrated above. In r/paleo they instead demonstrate competing concerns: some users are keen to prevent a degradation in post quality and a corruption of the core tenets of paleo, while others worry that overly zealous policing of what paleo *is* will result in users becoming alienated. A good example is a thread entitled 'What the hell is wrong with this sub?' from February 2013:

TK5 668 points

Lately it seems like this sub has been more about how to *sorta* cheat without feeling guilty. Every day it seems I see some sort of substitute recipe for cookies, muffins, and the like. ... I get that a lot of us are 80/20 or thereabouts, but in my opinion this sub should be more about the 80 and less about the ways to try and cram something from the 20 into the 80.

The conversation proceeds:

FART 190 points

Agreed completely, especially when you call someone out on the non-paleo ingredients in their meals and you get downvoted to oblivion. For example the 'paleo' sushi currently on the front page.

TK5 70 points

I finally got fed up with the 'paleo' thin mints.

Moderator RTB gets involved in the discussion, advocating for the other side of the debate:

RTB 41 points

We're here for discussion, not strict dogma/rote recital of can/can't have lists. If you have a problem with a post, comment on that post. That way, people reading it will see the possible issues. Upvote people who do.

A thread devoted to a picture of miso soup a user made gives further exposition of the frustrations of those on this side, with users condemning the perceived puritanism of voters:

NEW 3 points

Haha this triggers r/Paleo look at that downvote

SUMMER 1 point

I'm not quite sure why. Yam noodles are paleo/primal and miso paste is fermented =\

NEW 2 points

Don't worry to much OP. People on this board pretty much hate and downvote anything they believe it's not Paleo.

The two threads illustrate multiple kinds of boundary work: not just over what is and is not 'paleo', but also over what is and is not a legitimate downvote, or good content, or the kind of thing the forum should be 'about'. r/nootropics is engaging in boundary work, too: over what nootropics are, what kind of user is *really* using nootropics, what constitutes self-experimentation and what is abuse, and what kind of user base the community should wish to cultivate. This kind of boundary work is deeply contentious, and I explore it further in Chapter 6 as well as discussions of moderation below.

In response to aggressive downvoting, moderators on many subreddits have exercised platform discipline: voting users are advised by a pop-up of the ‘proper’ use of the downvote. The persistence of downvoting practices that adhere to individuals’ own conceptions of the button’s purpose (or their desire to win arguments) illustrates the limited power moderators have. They can neither force users to vote in a particular way, nor can any instruction to downvote ‘irrelevant’ material preclude users from interpreting ‘irrelevance’ as material they simply dislike (Bloor, 2002). Short of the solution implemented by r/askhistorians, who have used CSS to hide the downvote button (Massanari, 2015: 113), it is beyond the capabilities of moderators to re-discipline their communities in these cases. Moderators are keenly aware of these limitations. In one of the threads concerning the place of modafinil posts in r/nootropics, the OP (WHCH) argues that these posts should not be prohibited since ‘the community can decide whether it wants to see content by downvoting/upvoting’. The moderator (ZC) response is ‘that’s well and good until it gets too overwhelming and you just stop downvoting all together. That is the reason we made a collective decision to get rid of the posts. People all seemed to be getting annoyed, but yet there weren’t enough downvoters to make them go away.’ Votes, then, are only one part of a system of platform discipline wherein moderators and active users consider themselves to be collaborators in a collective endeavour to curate the content of the subreddit such that it reflects a particular vision. When votes are no longer enough to remove what moderators consider to be the will of the subreddit, they resort to other means of ensuring the integrity of the subreddit. This is the subject of the rest of this chapter.

Establishing consensus and platform discipline through FAQs

The two subreddits that form my study both concern self-improvement broadly construed: r/paleo representing a particular approach to dieting, and r/nootropics concerning itself with ‘cognitive enhancement’. They also draw on a significant corpus of knowledge that is often inaccessible to the layperson, and so there is a norm of epistemic reliance – believing things because reliable others believe them – to gain ‘second-hand’ knowledge (Hardwig, 1985; Wilson, 1983). Moreover, there is no way to differentiate *ex ante* between those who do and do not know what they are talking about. Consequently, users find themselves in epistemic quandaries where they must decide who to believe when others make competing claims. To some extent this helps foster discussion, but without guidelines as to what ground that discussion should take place on, unproductive modes of discourse can emerge in which everything is up for grabs and nothing can be concluded for certain.

As noted in Baym (1999: ch.4), ‘norms provide much of the tradition that organises online communities. In social worlds where objects to tie people together simply do not exist, normative traditions are particularly important.’ Frequently Asked Questions (FAQ) sections on websites are have been analysed as a means of codifying these norms and defining ‘the boundaries of acceptable behaviour’ (Burnett and Bonnici, 2003: 339). New users are referred to them, and – on reddit at least – they occupy a prominent position on the subreddit front page. On both r/paleo and r/nootropics, they perform the functions outlined above by creating *epistemic* social norms: answering common questions new or sceptical users have. As with other resources produced by ‘communities of practice’ (Akrich, 2010) this simultaneously stabilises a particular set of facts as the basic worldview from which discussion proceeds by answering questions in a definitive manner. They are partially written or maintained by moderators,⁴¹ and as such reflect their vision for the epistemic foundations of the community. Their publication and revision therefore establish a limited consensus for the individual community.

The FAQ of r/paleo (reddit, 2016) sets up an image of the world through the lens of paleo dieters: the human race’s genetic makeup was primarily formed during the Paleolithic Era, which took place from 2.5 million to 10,000 years ago. The invention of agriculture constituted an enormous shift in diet, which our bodies have not yet evolved to handle. It further contends that hunter-gatherers lived long, healthy lives free of chronic disease. It explains the health issues purportedly caused by ‘Neolithic foods’, called ‘diseases of civilisation’: ‘obesity, diabetes, heart disease, certain cancers, ‘metabolic syndrome’, tooth decay, scurvy, gout dementia, and more’ (ibid.). The lack of exposition of *how* these diseases are caused by Neolithic foods is part of what makes it seem authoritative. The FAQ asserts these diseases were, ‘virtually unknown among aboriginal people before contact with the modern world, and then appear rapidly as they adopt “Neolithic” foods’. In providing a set of answers to basic questions that create an idealised vision of evolutionary physiology, the FAQ creates a foundational framing for all of the questions and answers about food that follow.

⁴¹ Other contributors tend to be active users, though in some subreddits moderators are the only ones with capacity to edit, or else exercise veto power over edits made to FAQ sections. r/nootropics has its FAQ edited semi-regularly, primarily by one moderator (ZC). r/paleo has not had its FAQ edited in 3 years at the time of writing.

In contrast to the assertive tone of r/paleo, the r/nootropics FAQ (reddit, 2019b) places a significant premium on doing one's own research. 'This area of science,' the FAQ reads, 'is practiced with the objective of changing your brain's neurochemistry. You and you alone are responsible for your actions, therefore you are fully expected to research and read into this topic yourself and be prudent. No nootropic is a substitute for a good night's sleep, a healthy and active lifestyle and learning to motivate yourself' (ibid.). This places the epistemic burden on the user in an area fraught with misinformation and individualised issues, attempting to dissuade users from prematurely and recklessly taking supplements or drugs— a common issue in the subreddit. It also provides a comprehensive guide to nootropic substances. It provides links to safety guides and sites where one can 'track cognitive function over time' with brain-training games. It tells users to first try 'fixing' parts of their lives without supplementation. Only then should they consider nootropics, taking account of the dearth of evidence – with few exceptions – for their efficacy and safety.

Issues of boundary work (Gieryn, 1983) haunt both the r/paleo and r/nootropics communities, and both FAQs make an effort to defuse them. r/nootropics pitches a broad definitional tent for the term 'nootropics' under which most substances could comfortably sit: 'Nootropics, also referred to as smart drugs, memory enhancers, neuro enhancers, cognitive enhancers, and intelligence enhancers, are drugs, supplements, nutraceuticals, and functional foods that improve mental functions such as cognition, memory, intelligence, motivation, attention, and concentration.' It then lists criteria that nootropics 'originally' had to meet, explaining that the term has 'gradually expanded to either be synonymous with cognitive enhancers or refer to the subset of non-stimulant cognitive enhancing compounds with very few side effects and low toxicity.' This creates a nice point of reference for users who are engaging in arguments as to what, exactly, a nootropic is. My interviews revealed a wide array of interpretations of the term 'nootropics', but by normalising a wide definition, the subreddit manages to prevent many discussions from centring on definitional issues. It also means that discussions of most substances are permissible, creating a broad discussion base. There are significant similarities in the r/paleo FAQ, which also casts a wide net for what paleo 'is'. It provides an answer to the question 'How do I know if [food X] is paleo?' that prioritises user experience, advocating that they 'don't stop eating [a particular food] just because "it's not paleo" [if it's not making them sick]', advising that 'some people attempt to find as close an analogue to wild foods as possible ... Others do fine simply eating from broad categories of foods and avoiding other groups'. The community has historically encountered problems with users attempting to proselytise their 'One

True Paleo’, to quote the subreddit’s sidebar (and interviewee JU), and as such the FAQ reflects a desire to immunise the subreddit against these kinds of divisive posts.

The FAQs are shaped by the perceived needs of the community, and the common issues they encounter with potential to deteriorate its quality or disrupt normal functioning. *r/nootropics*’ FAQ has several long sections in which almost every conceivable nootropic is introduced, explained, and evaluated on a variety of metrics. Each one links to peer-reviewed studies and meta-analyses, with indicators as to whether those studies found a positive or null result for effects on a particular aspect of cognition. There are dosage guidelines and links to ‘reliable suppliers’, plus links to the recommended dosages of individual nootropics on nutrition and supplement information site ‘Examine’. In sum, the FAQ provides a vast quantity of summaries of and links to peer-reviewed evidence, prioritising completeness and safety. It is shaped as a scientific document, full of caveats and hedging and warnings, in order to influence the kinds of discourse that take place on *r/nootropics*. It attempts to diminish the number of posts written by individuals who have taken recreational quantities of drugs and are experiencing what is derisively referred to as ‘god mode’, where they feel capable of doing anything. One interviewee pointed out that the question, ‘are you sure you’re not having a manic episode?’ was a trope on the subreddit, commented whenever a user posts a breathless review of a substance they assert had incredible effects. The FAQ stands in stark contrast to these accounts, which themselves constitute a subversion of the moderators’ wishes, and acts as a bulwark against even more users flooding the subreddit with this kind of content. In contrast, the *r/paleo* FAQ attempts to woo users. It dispels a number of negative myths about the paleo diet, whilst also making it look relatively easy and appetising, reflecting the fact that *r/paleo* is competing against a significant number of other diets while *r/nootropics* is one of the largest forums of its kind on the internet, with no meaningful competition in its area.

Fundamentally, FAQs play a stabilising role in the politics of the platform, preventing discussion from moving off-piste and creating a limited area of epistemic consensus and a common set of terms and understandings that users utilise as a base for conversation. In his recent work on content moderation *Custodians of the Internet*, Tarleton Gillespie (2018) suggests that

Social media platforms need rules that can be followed, that make sense to users, that give their policy team a reasonably clear guide for deciding what to remove, that leave enough breathing room for questionable content they might want to retain, that can change over time, and that will provide

a satisfactory justification for removals if they're disputed, whether by users themselves or in the flare of public scrutiny. (ibid.: 51)

I would put forward a similar argument for the role of FAQs in knowledge-building subreddits like r/paleo and r/nootropics. The FAQ functions to provide guidelines along which discussions should run, a clear conception of what kinds of views are likely to be tolerated, and justification for when users might be told to go away and do their research before posting again. They are written for the new user, in the hope that they will familiarise themselves before diluting the signal-to-noise ratio in the subreddit with posts which are answered elsewhere. Moreover, they are written for the experienced user, to allow them to direct newcomers and less experienced community members somewhere their questions can be answered without wasting the time and effort of those who have answered them dozens of times before. They are continually revised in the face of new information and challenges, acting as an extension of the will of the moderators in the platform dialectic where they attempt to impose some discipline on communities as they grow and change and bring in new users. Those users in turn respond to the FAQ – sometimes altering their posts, sometimes remaining silent, sometimes completely ignoring it. Such is the nature of an internet platform with few barriers or costs to participation.

The fault in our stars: platform discipline and subversion through 'flair'

When I first started reading r/paleo, I noticed that some users had yellow stars next to their names. The sidebar indicated this was to show they were a 'helpful user', similar to Twitter's 'verified' blue tick, or how Facebook group moderators are marked out when they post. However, it seemed few people with stars actually posted. In an interview with r/paleo moderator JU, I asked why. His answer is below, but first requires contextualisation.

The r/paleo subreddit is devoted to 'anyone following or interested in learning more about an ancestral-style diet, such as paleo, primal, or whatever other names they're falling under these days' (reddit, 2010). There is a consensus that humans are best adapted to consume the kinds of foods that were present in their evolutionary milieu for the longest period. They tend to eschew grains, legumes, dairy, and other foods that have primarily been consumed since the Neolithic Revolution that brought about mass agriculture. This consensus is limited: as time has passed and more authors have weighed in, divergence has become more common. In part, this is due to the emphasis upon individual differences that necessarily follows from a view of diet that is

heavily influenced by evolution and genetics. This means that one of the key issues that faces paleo, as a community, is the tension between the need to maintain some kind of coherent concept of the diet whilst also allowing flexibility for adherents to pursue a diet that accounts for individual differences.

One of the only rules that r/paleo moderators actively enforce is not to ‘Act like your One True Paleo™ is the be-all, end-all and is perfect for every human on Earth’ (ibid.). This rule was not always in place; instead, it was enacted in response to what one experienced male moderator (interviewee JU) in his 30s who had been doing paleo for a number of years, ‘saw as a growing number of communities attacking one another for not following “real” paleo or whatever they wanted to call it’. Not only did he say this was ‘not good for the community’, but it also actively detracted from users’ ability to discriminate between those who knew what they were talking about and those who did not. He goes on, ‘A lot of the people doing [it] were relative newbies attacking people that have been around for a lot longer. ... First rule of Dunning-Kruger club is you don’t know you’re in Dunning-Kruger club, right?’ As such, he implemented *platform discipline* through rule changes, which were instituted to both maintain the positive atmosphere of the community and to ensure that those with the least experience and knowledge did not attempt to impose a pseudo-hegemonic conception of paleo upon others. He speculates that the tendency for ‘relative newbies to criticise people who’ve been doing it for a long time’ may be due to ‘the relative transience of reddit communities ... there aren’t really any markers that somebody is an experienced community member’ – note the contrast here with online communities as studied by Baym (1999) and other scholars. The implementation of stars was supposed to resolve this issue.

We started giving out stars because we wanted to recognize people that were helpful (and thus encourage others to be helpful), but it also put us in this weird place of ‘sanctioning’ that person. Like, yes, they’ve been helpful, but what if then, tomorrow, they start spamming some witch-doctor crystals or something? Or just generally being a jerk (I’d probably be more annoyed with the latter). That’s part of why we kind of phased out giving stars. It also kind of gave an unintentional appearance of an appeal to authority; as though we were saying ‘hey, these guys know a lot. Listen to them over non-starred people’, which was not at all our intention. (JU, US-based 36-year-old web developer and moderator of r/paleo)

The implementation of stars, in attempting to resolve one problem (a lack of community activity and helpfulness) ended up exacerbating another by producing an undesired and potentially unwarranted air of authority around users with stars. This exemplifies the subversion I outlined above. The moderators intended the stars to facilitate helpful behaviour, but for users they were read as an endorsement of an individual, as even with a note in the sidebar saying they were for 'helpful' users, they did not contain the instructions for their own interpretation (Bloor, 2002).

Unfortunately for r/paleo, the decision to give out stars ended as predicted. I asked JU what happened to make them phase out the system.

I started seeing people with stars that were kind of antithetical to the way I saw paleo, and the direction I wanted the sub to go (this was before the 'there isn't One True Paleo' rules, and was part of what crystallized that idea for me). Seeing starred members being, say, critical of other commenters for not being 'strict enough' just felt kind of gross to me.

The consequence of accidentally granting users authority was that those users began to *act* as though they had authority, and thus to corrode the atmosphere of the community rather than to improve it. The moderator responded by redisciplining, phasing out the star system.

Stars are one example of flair. Some subreddits have entire flair systems that are used as a means of carrying on in-jokes and forming a community atmosphere, or instructing users on the credentials of a particular member. For example, r/science and r/askhistorians both use a flair system to indicate an individual's expertise. The latter subreddit, known for its strict content policy under which any off-topic or non-sourced comments are deleted, takes a serious approach to the process of giving flair. 'A flair in /r/AskHistorians indicates extensive, in-depth knowledge about an area of history *and* a proven track record of providing great answers in the subreddit,' the page notes (Georgy_K_Zhukov, 2018). In addition to providing evidence of expertise in a topic in the form of high quality, well-cited answers to questions in the subreddit, flaired users are expected to adhere to high standards of behaviour across reddit as a whole. 'We invest a large amount of trust in the flaired members of /r/askhistorians,' the guide says, 'as they represent the subreddit. ... As such, we do take into account an applicant's user history reddit-wide when reviewing an application, and will reject applicants whose post history demonstrate bigotry, racism, or sexism.' This approach to content curation and user vetting demonstrates the

variability of subreddits' responses to the problem of epistemic reliance, and undergirds the need for an understanding of reddit moderation that takes into account this divergence.

Whereas *r/paleo* relies upon users to come to their own conclusions based on the comments and votes in front of them and refuses to endorse individual users, no matter how experienced, *r/AskHistorians* takes a credentialist approach to expertise. It vests trust in users based on what could be seen as a modified interpretation of Goldman's classic criteria for assessing experts, incorporating track record, credentials, overall behaviour, and dialectical skill (Goldman, 2001). Moreover, this provides a small illustration of the manifold ways in which moderators enact platform discipline. *r/AskHistorians* not only implemented a flair system to create an environment in which expertise would be rewarded, the moderators also actively policed the standards of behaviour of flair owners to prevent the degradation of the authority of others who held flair.

Policing vested interests

To further elucidate how moderators impose platform discipline to circumvent and overcome epistemic problems, I turn to the problem of policing vested interests and bias, using two examples of flaring as platform discipline from *r/nootropics* and *r/paleo*.

A simple example of the policing of bias amongst users comes from *r/paleo*, where there are regular clashes between those who adhere to the paleo diet, which tends to involve the consumption of a significant quantity of meat, and vegans. In one instance, a user with 'vegan' in their handle posted an article claiming that the original 'paleo' diet involved cannibalism. In response, a moderator pinned their own comment to the top of the post, writing 'Another vegan coming in and posting a stupid, sensational "haw haw paleo dum" article under the guise of "discussion"'. They also placed a tag next to the title of the post, reading 'Vegan Troll'. Whilst most responses were measured rebuttals of the premise of the article, the moderator's input contributed towards undermining the idea that the post was in good faith, preventing the opening of any epistemic controversy over the diet's validity.

A more in-depth analysis of the complex relationship between users and moderators, and the role platform politics has to play in the mediation of epistemic quandaries, comes from *r/nootropics*. The market for nootropics suffers from significant issues with regulation. Many of

the substances that individuals purchase and consume are not readily available from reputable pharmaceutical companies, and often must be sold under the label ‘supplements’ and eschew claims of clinical efficacy. Users source modafinil from India, Ritalin and Adderall from the dark web, and noopept from Russia. In at least two instances r/nootropics users have been hospitalised after taking what they thought was a therapeutic dose of a nootropic but turned out to be an overdose of an entirely different substance.

One forum moderator runs their own, well-regarded nootropics company. In the interviews I conducted, I found that this company was generally held in high regard by redditors. One relatively new user (interviewee SY), a 20-year old American man, stated that ‘It used to be run by someone else, but got taken over by the same redditor that runs [name redacted]. The quality at both of those websites is impeccable, and for that the owner is trusted by seemingly all of Reddit.’ Not all users were so trusting. OB, a 22-year-old man with more than 5 years’ experience of nootropics, stated that,

I do not take the stuff MYASD says seriously on the subreddit because of the conflict of interest his role poses to the users. ... Here are his red flags: high prices on [name redacted], him being a moderator (and businessowner), him actively encouraging others to investigate rival businesses, him being very vocal against other businesses, and a few others I can’t remember. Obviously anyone deserves to be passionate enough about their hobby to become a mod on a forum and to become a business-owner, but the two together can corrupt your perspective. ... Since I can’t be sure I just avoid him.

These concerns came to a head in 2013, when the moderator in question posted to inform users of a redditor who ended up in hospital as a result of taking what they thought was pyritinol, but turned out to be a large overdose of Benadryl. The top-upvoted comment, by a since-deleted user, asks whether it is a conflict of interest for moderators to own competing nootropics companies, and argues that transparency in this regard is necessary. The moderator responds that they would never use their influence to subvert other vendors, but nonetheless that they will place a flair next to their name indicating their ownership of a specific nootropics company.

As the nootropics industry is still a fledgling market, word of mouth is important in influencing where users buy from. Many threads on r/nootropics discuss sourcing and preferred vendors. Users exerted pressure in the only way open to them – calling out the moderation team publicly,

on a popular post – to neutralise what they perceived as a threat to the precarious solution to one of the problems of epistemic reliance faced by their community.

The flair on the moderator's name has had divergent effects on users, with some associating his name with a reputable brand of nootropics and therefore placing greater trust in him, and others seeing the business association and developing only greater concerns about a potential conflict of interest. As with the examples above, platform discipline shows itself to be a complex and intricate set of processes, where trying to enact one's vision can produce unintended consequences through the interpretive flexibility of the behaviours it entails.

Ensuring drug quality in r/nootropics

Both r/nootropics and r/paleo have sidebars that contain information the moderators deem important to the community. r/nootropics has a section entitled 'unreliable vendors', listing vendors who have had one or more incidents of sending out 'inauthentic' product. It is kept updated by the moderation team, and currently contains five vendors. Attached to multiple entries are screenshots of test results from laboratories where their products have been sent by community members to test their purity and authenticity. There are significant concerns in the nootropics community about the presence of heavy metals and other impurities in product, as well as multiple instances of users being sent the wrong product or a placebo. One interviewee, for example, was convinced that many pills he had taken early on in his experimentation with nootropics were sugar pills and had since changed vendors. In response to the problem of vendor trustworthiness, moderators implement platform discipline measures which they hope will reshape users' behaviour.

In addition, r/nootropics has a 'Reliable Supplier List' in its FAQ. Two vendors are mentioned for the discount codes they offer redditors, and below this is a list of individual vendors, with reviews attached under the heading 'Is [vendor] a reliable supplier?'. There is a degree of epistemic modesty displayed, with even the most reputable vendors described as 'a reliable supplier', or 'generally considered to be reliable'. Many vendors are called out for dubious advertising and marketing practices, with some having 'posted fake reviews on reddit and lied about their background to moderators' and giving 'fake testimonials & advertising without stating their affiliation'. The page also links to threads discussing vendors. The format of this page grants moderators significant latitude to make pronouncements about the reliability of

individual vendors. This is particularly important given that r/nootropics is one of the two largest nootropics communities on the internet. As such, the FAQ can act as a site of establishing consensus, or community knowledge, and including comments on vendors on the page indicates that this, too, is as close to an official view as a community like this can have.

The FAQ also includes a section on an ‘Independent Testing Project’. It reads, ‘r/nootropics began an independent testing project in 2013 to help bring accurate purity and authenticity information to the nootropics community. This project is funded through sponsorship from select trustworthy businesses which were highlighted in the FAQ prior to sponsoring and individual donors from the community.’ By indicating that funds for testing come only from businesses with a prior reputation for reliability, moderators attempt to undercut issues of provenance and bias arising when soliciting funds from businesses to investigate the quality of products provided by competitors. This project, however, has been well-received. One user states,

I’m new to nootropics. Trust is my biggest issue. It’s easy to find supplier, but I don’t know who can be trusted. Testing the purity of suppliers’ products through third parties is such a great idea.

The results are placed on the FAQ, as well as in vendor review sections. The moderation team here has exercised platform discipline, in cooperation with the community at large, to construct epistemic certainty for themselves through a combination of third-party lab testing (taken to be implicitly unimpeachable) and the dissemination mechanisms the subreddit affords. In turn, this reshapes the ways in which users relate to vendors, taking results from the independent testing results as indicative of their overall trustworthiness.

Conclusions

This chapter began with an exploration of how reddit’s karma system structures discourse. As users care about karma, and particular kinds of posts are consistently rewarded and made more visible on subreddits, this encourages posts and comments with characteristic features to be made (and, in turn, upvoted). This is the subject of significant discourse on reddit, and both r/paleo and r/nootropics have had multiple threads in which the perceived corrupting influence of the karma system on the integrity of their communities has been debated. In both cases, these ‘meta’ discussion posts illuminate anxieties that are key to understanding these spaces as

communities which seek to build particular kinds of knowledge and togetherness. Likewise, in both cases moderators have attested to the inadequacy of voting as a means of policing what kind of content is posted and rewarded; consequently, they have turned to other means that require the exertion of moderator power in order to maintain the atmosphere and integrity of the forum. These include ruling out particular kinds of content, creating ‘sister’ subreddits where this content is directed, and filtering content using an ‘AutoModerator’ which automatically removes submissions which trespass the aforementioned boundaries. From here, I moved to a discussion of the complexity and politics of day-to-day relationships between users and reddit’s volunteer moderators.

It is worth noting the differences in actions taken by the moderators of r/paleo and r/nootropics in their attempts to maintain post quality and a high signal/noise ratio. The r/paleo moderators have taken a more hands-off approach, implementing FAQ sections and enforcing the rule that users cannot engage in gatekeeping forms of proselytization that prevent others from feeling included. That they chose this approach reflects some of the internal struggles of the paleo community, where there is a difficulty in maintaining cohesion (and user engagement) because of tensions over what is or is not ‘real paleo’, and the fissures in community harmony that result. By contrast, r/nootropics is one of the most popular spaces of its kind, and has fewer issues with user retention and engagement: they are not competing with a vast array of other communities in the same way as any given diet community must. As such, the moderators have chosen more direct routes of exerting their power, forming sister subreddits and filtering out content they deem degrading to the quality of discussion. This is not without its dialectical consequences: users push back on what they consider to be overreach by moderators. However, users have comparatively little power to leverage against these actions, as there are fewer alternative spaces to have their conversations amongst an engaged userbase than there would be for a disgruntled dieter. Consequently, the platform dialectic plays out differently among these communities in a way that is influenced by their initial conditions, their power dynamics, and the way different sets of users choose to utilise the features available to them.

Many scholars associate ‘the sustainability of a virtual community to its capacity to help members with quality information and resources,’ (Hercheui, 2011) and consequently moderators are always in a precarious position. While administrators vest them with significant power, adopting a *laissez-faire* approach, moderators are subject to the risk that if they push their vision for the community too hard, they will lose user, and subscribers will simply go elsewhere. Not only must

they enforce rules, delete spam, and avert or close controversies; they must also maintain community atmosphere and integrity, implementing design features available to them in a way that disciplines users without alienating them. It is precisely the transience of reddit communities, engendered by the affordance of one user account being used for the whole of reddit, that results in moderators occupying such a powerful and yet precarious position. This goes double for subreddits which function as communities as practice, where epistemic trust binds members together, and is even more important for subreddits like r/paleo and r/nootropics where there are direct competitor communities, or knowledge and credibility are already fragile and contested.

These forums, then, constitute a particular type of community. Their participants describe them as ‘communities’ (Neff and Nafus, 2016: 28-9), but they might also be considered ‘communities of practice’ (Akrich, 2010) by analysts. There is a mutual engagement in practice; a joint epistemic enterprise; a shared repertoire of resources produced over time; and to some extent a stable group with strong personal interrelationships (Murillo, 2008). However, they differ from online communities such as Usenet groups (Baym, 1999) and patient communities (Ziebland and Wyke, 2012) in that while some moderators and core users persist and maintain bonds, much traffic and engagement is transient: users subscribe to many subreddits, and then pick and choose which to engage in. Consequently, they are a specific type of community of practice, characterised by transient membership and strong moderator control.

Moderators seeking to maintain the community must recognise the challenge of the *platform dialectic*: manipulating affordances and design features in an attempt at enacting their vision and exerting control over the discourse always results in a user response, and that response is often unforeseen or unforeseeable. Users subvert these attempts: they still downvote content they disagree with, post manic streams of thought to r/nootropics, or proselytise in r/paleo because they think the gold star next to their name indicates their authority. They may vocally protest, as with the users who distrusted a moderator who did not directly and consistently disclose his ownership of a nootropics shop. Users interpret affordances in ways that make sense to them, but may misalign with moderator intentions, because the rules don’t contain instructions for their own interpretation (Bloor, 2002; Wittgenstein, 1958).

6. Talking About Evidence

This chapter works through the multiple ways individuals in r/paleo and r/nootropics deal with ‘external’ evidence: how they decide who and what to trust, how users establish credibility and authority, and how disputes are mediated and resolved. The chapter includes in-depth analysis of rhetorical tactics, drawing on existing studies of arguments in online communities where knowledge is a significant component (e.g. Gunnarsson and Elam, 2012; Hall et al., 2015; Jauho, 2014; Richardson, 2003). I first discuss the use of ‘bias’ and ‘vested interests’ as rhetorical tools in both communities, illustrating how users commonly question the legitimacy of sources as a means of undercutting information that might be damaging to the tenability of their worldview, or alternatively as a way of ensuring the integrity of nootropics vendors. Then, I consider how the accoutrements and vernacular of science are used as rhetorical tactics, examining the use of credentials, citations, and methodological critiques. From there, I move to analyse ‘imaginaries’: user-constructed images and understandings of both the Paleolithic world and their own neurochemistry that serve to both police the boundaries of what constitutes a paleo diet, and to create a common reference point for users to be able to understand others’ cognitive experiences. Finally, I examine the practice of ‘hedging’, where users attempt to gain credibility by indicating the limits of their knowledge.

To contextualise this chapter, it is necessary to first note that whilst r/paleo and r/nootropics are spaces in which evidence is accumulated and interrogated, and authority is gained and contested, they are also *dramaturgical* spaces. That is, community members are not simply posting their thoughts and feelings; rather, they frame and present those thoughts and feelings in a way that is supposed to appeal to the kind of person they imagine is on ‘the other end of the screen’. Much as the way in which we present ourselves in the physical world is shaped by the imagined responses of others (Cooley, 1902), reddit users are influenced by the imagined votes and comments that will come in response to their content and comments. As argued in Chapter 5, reddit’s voting mechanic means that users have a direct incentive to post content that appeals to the core demographics of the community they are in, and in most instances those demographics skew white, male, USA-based, nerdy, and fond of STEM. The consequence of this is that posts should be viewed as performances for an audience (Goffman, 1990). Massanari calls reddit a site of ‘play’, where identities and ideas are actively configured, reconfigured, subverted and dissected (Massanari, 2013). Hogan (2010) makes the argument that social media sites (including reddit) are characterised by ‘exhibitions’ rather than ‘performances’, on the basis that users tend to

submit data without ‘continually [monitoring] these data as an audience is receiving it’. *Prima facie* this seems to miscategorise what happens on reddit, where users display an acute awareness of the reception their comments are getting. For example, users will often edit their comment when it is being downvoted, and ask why it is being downvoted; alternatively, if they make a highly upvoted joke, they may make an edit humorously noting that their most upvoted comment of all time is a vulgar pun. Consequently, we must imagine interactions in reddit communities as performances as well as exhibitions; the reception of content makes a significant difference to how users interact with one another and the kind of content they post.

Policing vested interests (reprise)

For users to be able to trust the word of others, they must know that they are competent and that they are speaking in good faith (Tollefsen, 2007). Competence is assessed by a variety of metrics in r/paleo and r/nootropics, and these are explored elsewhere. First, in this section, I examine sincerity, or the idea of speaking in good faith. Key issues in r/paleo and r/nootropics revolve around the idea that some users may not be speaking in good faith some of the time, and also that some ‘traditional’ sources of authority such as medical practitioners may also be acting in bad faith or else have interests (or particular educational or professional backgrounds or commitments) that are clouding their capacity to either know or disseminate the truth. Across this thesis I develop the argument that alternative mechanisms for attributing authority include *diminished subjectiveness* and *aspirational subjectivity*: that is, the idea that users attribute authority or expert status to those who appear to be less influenced by minimal or poor quality evidence, or to those who have achieved the things they themselves wish to achieve.

A major discursive theme in both r/paleo and r/nootropics is a distrust of what are considered by members to be ‘mainstream’ sources of knowledge. From the perspective of r/paleo, the reason for this is simple: they have been misinformed, either deliberately or incidentally, about diet and nutrition for their entire lives. They were misinformed by doctors, governments, nutritionists, the media, and all kinds of other organisations. They know this, because their personal experience of weight loss, or health improvement, or progress on whatever metric, takes primacy over whatever information comes from an external body. If they were told that they should cut down on or avoid saturated fats and instead embrace wholegrains, but they feel better now that they have done the opposite, then the obvious explanation to them is that they should not trust those who misinformed them.

For r/nootropics, mistrust comes from more heterogeneous sources. In my experience of the subreddit, users came from a number of different groups. Some had bad experiences with doctors and psychiatrists: they felt they were suffering from long-term medication with Adderall, or the effects of over-prescription of opioids or benzodiazepines. As such, they mistrusted information from the medical establishment. Others were recreational drug users, for whom governments are obvious sources of misinformation given the War on Drugs. Others simply wanted to improve their bodies, or reach a baseline of normality, and had found nootropics – a relatively poorly understood and somewhat stigmatised group of substances – helpful. The net effect is that ‘establishment’ or ‘mainstream’ sources of knowledge are treated with suspicion.

In addition to a specific mistrust of institutions deemed part of the ‘mainstream’ or ‘establishment’, there are pragmatic concerns within both communities. Nootropics are only sold by a small number of vendors who are often recently established and have numerous questions surrounding their trustworthiness. r/nootropics is one of the largest communities of its kind on the internet, rendering it a potentially lucrative ground for word-of-mouth marketing. In some instances, fake reviews have been posted on r/nootropics, either to improve the reputation of a vendor or attempt to degrade that of the competition. r/paleo has fewer issues here given that appropriate food is widely available, and whilst specialist paleo vendors exist, there is less of a culture of posting reviews on the subreddit. There are a large number of paleo blogs and sites elsewhere, and most advertising takes place through other media. However, one threat to epistemic harmony in the paleo community comes in the form of users posting articles or information which supposedly ‘falsifies’ or otherwise calls into question the paleo diet.

It is important to distinguish between a mistrust of *practitioners*, including doctors and some scientists, and a mistrust of the *idea of science*. In both r/paleo and r/nootropics there is significant trust placed in an idealised conception of science or the scientific method. Papers are cited; experiments are conducted; predictions and explanations are made and given. Whilst in many instances users are encouraged to try things for themselves, there is still a general consensus that theory and evidence are important in establishing one’s worldview.

Because of this trust in science contrasted with a mistrust of particular institutions and the need to be careful of fake reviews and similar threats, there is a significant role played in both communities by discussions and actions that attempt to police what are perceived as biased

actors or vested interests. Not only does this cohere with the idea that users must assess the sincerity of a speaker (considering whether they are being wilfully misleading or have reason not to be telling the whole truth) in order to give credence to their testimony (Tollefsen, 2007); it also lines up with existing conceptions of expertise which include ‘assessing bias’ as an indicator of whether a putative expert ought to be trusted (Collins and Evans, 2007; Goldman, 2001). The rest of this section deals with illustrating the details of this kind of policing.

Denying medical expertise on diet in r/paleo

As is common to self-help and self-improvement communities across the internet, r/paleo and r/nootropics both state that they should not be considered sources of medical advice. r/paleo notes in its sidebar that ‘you really should not use the words “you need” here, unless they’re followed by something like “to talk to your doctor”’, indicating that medical professionals ought to be the ultimate arbiter of what one does with one’s body. This stance is coupled with the felt need to have both the paleo diet and the use of nootropics accepted by doctors and scientists, as well as the lay public, because with greater acceptance and exposure comes both increased research funding and availability of goods (e.g. drugs and specialist foods), as well as a potential diminution of hostile state intervention (for example, the r/nootropics community is deeply concerned about government scheduling⁴² of kratom, a plant used as an alternative to methadone and other heroin replacements). Finally, the reality for users of both communities is that they are dependent upon doctors and other parts of the medical profession (e.g. clinical labs for testing substance purity) for blood tests, screens, and other procedures and advice.

Simultaneously, the high levels of distrust that members of both r/nootropics and r/paleo express toward the medical profession at large (and particularly institutions like the American Heart Association) indicates a tension between attitudes and needs. This plays out as a generalised criticism of medical professionals’ handling of their *specific* concerns (e.g. doctors can help with cancer, but not with diet; or doctors can be trusted with physical issues, but not mental health), coupled with explanations as to why this is likely the case. This kind of tension has precedent in other communities, among them the steroid-using bodybuilding community for whom doctors are both a necessity (for blood tests and check-ups) and a hindrance due to the

⁴² Putting the substance on the Scheduled Drugs list, rendering its possession and circulation subject to legal constraints.

limitations of their education which results in them ‘talking down’ to men with far more understanding and experience of steroid use than them (Monaghan, 1999).

For an example of this kind of tension, we can look to a thread from 2017 about the Netflix show, *Bill Nye Saves the World*. The titular ‘Science Guy’ presented episodes on topics ranging from sex and gender, to climate change. r/paleo took an interest in an episode on ‘fad diets’ (itself a normatively laden term). Their concerns focus on the misrepresentation of the content and premise of paleo, as well as the claim that paleo diets are not healthy and that people would be better off pursuing a vegetarian diet. A few extracts from the thread are illustrative:

JOHN 19 points

My dad was referred to a registered dietitian at a hospital after he was diagnosed pre-diabetic. He mentioned that his son tries to use paleo as a guideline and has lost a large amount of fat and gained a lot of muscle. Her response was ‘oh, both kinds are bad for you. The all-meat paleo and the all grains paleo.’ Stunning.

Here the user intimates with humour that medical professionals are out of touch with the reality of nutritional science, amusingly contrasting the r/paleo knowledge that paleo consists neither of ‘all meat’ nor (famously) ‘all grain’ with the ‘registered dietitian’s’ insistence that paleo was one or the other. The thread continues with multiple other users chiming in with their negative experiences of medical professionals with respect to dietary knowledge.

LAY 1 point

I’m studying dietetics right now and a lot of the current information they are teaching is pretty awful. It’s behind the times in my opinion, and of course, pushes a more vegetarian (but surprisingly not vegan) diet.

MED 3 points

Paleo and low-carb in general are still frowned upon in the medical world, mostly by older docs though. I’m a medical student and I recently observed how a doc told an overweight woman to ‘cut the butter and oils’ without saying anything about the 2 litre coke bottle in her purse.

LAY 2 points

A lot of the information they are passing on to students younger than me (I’m 28) at my school, is full of really outdated dietary advice.

LYNX 1 point

I can’t believe doctors are even allowed to give nutritional advice. They learn next to zero about nutrition in med school. ... My best friend is in

med school, she said they literally had like 2 lectures on it, explaining the most basic stuff, not much different from what was covered in high school biology classes.

JOHN 3 points

Lol they told my dad both 'lots of servings of healthy whole grains are essential to your wellbeing, and don't influence diabetes', and 'if your blood sugars are low, eating a slice or two of bread is a quick way to get them back up.' Like. With a straight face.

The arguments made primarily revolve around the idea that the education in dietetics and nutrition given to medical students is both insufficient and misinforming. The latter belief is influenced by the narrative within paleo that the medical profession is in thrall to the diet and pharmaceutical industries and has failed to recognise that the information peddled in mainstream dietary advice is counterproductive from the perspective of health.

Notably, these arguments are deployed primarily when doctors give advice that contradicts paleo. Occasionally users will post accounts of good experiences they have had with their doctors, who surprised them by suggesting that they follow a paleo diet or not 'lecturing them on fad diets', or themselves express surprise at positive changes in cholesterol or other biomarkers that paleo dieters have exhibited. In these instances, r/paleo members will often note the doctor's own personal connection with the diet or illustrate some other means by which they are exceptional, indicating that the overarching narrative of capture by vested interests is intact. As such, this coheres with my concepts of both *aspirational subjectivity* and *diminished subjectiveness*. These doctors are considered to have some degree of experience with the diet that grants them the authority to speak on its efficacy (aspirational subjectivity) as well as being less subject to the biases of their training and mainstream scientific discourse (diminished subjectiveness). There is what some might see as confirmation-seeking behaviour on display here: users are willing to believe doctors who validate choices the users have already decided are (at least currently) correct for them, but will not be dissuaded from their path by doctors who are doubtful. Doubt is perceived as a function of ignorance; validation is a function of experience or diminished subjectiveness. The attitude that r/paleo has towards the medical profession and their attempts to steer people towards a diet that is considered unhealthy by paleo standards is perhaps best encapsulated in a thread about encounters with doctors, in which one user comments, 'The only people that disapprove of Paleo are those that don't understand it.'

The coconut oil controversy

Above, I explored how individual doctors and the medical profession as a whole come in for critique from r/paleo as a result of the dietary prescriptions they make that are at odds with r/paleo's chosen diet. These critiques stem in part from a frustration at the power wielded by medical professionals and their institutions. This is nowhere better exemplified than in a series of posts from r/paleo from June 2017, when an article appeared on the BBC News website entitled 'Coconut oil "as unhealthy as beef fat and butter"' (BBC News, 2017). The article outlined 'updated advice' from the American Heart Association:

According to the AHA, 82% of the fat in coconut oil is saturated. That's more than in butter (63%), beef fat (50%) and pork lard (39%). And, like other saturated fats, studies show it can increase 'bad' cholesterol. Some claim that the mixture of fats in coconut oil still make it a healthy option, but the AHA says there is no good quality evidence for this. It says people should limit how much saturated fat they eat, replacing some of it with unsaturated vegetable oils – olive oil and sunflower oil, and their spreads. (ibid.)

Users of r/paleo linked the BBC article the same day, and a similar article from USA Today 3 days later, with two further posts referencing the study. The majority of comments on each article were negative.

Coconut oil is a popular fat in the paleo community, whose consensus on saturated fats and fats containing high proportions of medium-chain triglycerides (including coconut oil) is that they are healthful and can be consumed safely in large quantities. As such, the AHA's narrative directly contradicts knowledge in r/paleo. Given the epistemic authority on health matters delegated to bodies like the AHA by many in society, this statement caused a significant amount of annoyance as it had the potential to further undermine popular acceptance of paleo precepts and dietary practices.

There are two strands of argumentation related to trust that run through the reddit comments on these articles. The first is that one cannot trust the mainstream media.⁴³ The second is that the AHA has a financial interest in promoting research that supports the narratives promulgated by

⁴³ For some idealised conception of 'mainstream media', a political object which shifts in accordance with the needs of users (in r/paleo, r/nootropics, and elsewhere).

their donor organisations, who are themselves large agricultural and pharmaceutical companies who are interested in perpetuating the idea that saturated fats are harmful, polyunsaturated fats are healthful, and too much ‘bad’ cholesterol is responsible for CVD.

First, with respect to media, most comments tended to repeat the common refrain from the paleo literature that ‘conventional wisdom’ is often mistaken; that it has been both passively influenced and actively captured and manipulated by a variety of actors in such a way that it is perpetuating narratives, behaviours, and practices that are at best sub-optimal and at worst responsible for the premature deaths of billions (Sisson, 2012). The comments that best illustrate this are those that say, for example, ‘Shame on the media. Seems like a last ditch effort to confuse the masses and soak in a bit more case until the truth sets us free.’ A response asserts that it is in fact, ‘A last ditch effort to not look like the lying scumbags they are.’ Another comment states, ‘All fat is bad except vegetable oils! According to our government – don’t trust the government!’

I noted above that r/paleo users tend to point out vested interests in instances where the subject of criticism espouses a narrative that contravenes paleo principles or practices, but refrain from doing so when coverage is positive. This trend continues in this scenario, where one user comments, ‘They have conceded that some fat is healthy so they are moving in our direction.’ As explored in Chapter 5 when discussing FAQs as a foundational epistemic public good, the community works within a paradigm which takes the tenets of paleo as a given, and so tends to accept commentary that supports this whilst critiquing commentary that goes against it. Whilst one might think that critiquing the vested interests or bias of the media might mean that individuals are unwilling to trust it *tout court*, they instead demonstrate a willingness to show credence to articles that resonate with their core tenets.

The second critique is levelled at the AHA. It is worth noting first that one of the mechanisms utilised by paleo gurus to encourage authority delegation from readers is to demonstrate that they have very little to gain from their readers’ credence. Gurus like Mark Sisson and Robb Wolf work to show that they are *at most* trying to sell their readers a book, but are otherwise motivated primarily by the passion they have for revealing the truths they have found hidden in the world and passing these on to others (Cordain, 2010; Sisson, 2012; Wolf, 2017, 2010). The corollary is that these gurus tend to contest the authority of those they deem to have a vested interest in

propagating narratives they consider mistaken. For example, the literature contains a number of lengthy critiques of Ancel Keys' work on nutrition (Gunnars, 2013; Sisson, 2009; Taubes, 2008).

There is precedent, then, for the kind of critique that the members of r/paleo level at the AHA in threads about coconut oil. The most upvoted comment in one thread reads,

AZIZ 33 points

The American Heart Association was brought to prominence in the 40's after a \$1.5m charitable donation by Proctor and Gamble. Prior to that it was just a little backwater cardiologist group. This donation allowed the AHA to spring into the beast that we know today. Funny story about Proctor and Gamble: of the billion products that they produce, one of them might sound familiar to you. Crisco? The plant based shortening product? Funny how animal (namely saturated) fat started to become demonised around this time.

The analytical chain here runs: the AHA received a large donation, 70 years ago, from a company that produces a competing oil product, and therefore their pronouncements on issues of the healthfulness of particular kinds of fats should be ignored. On the same thread another commenter outlines in detail the suppliers of grant money to the AHA, referencing the source article from the AHA which condemned coconut oil (Sacks et al., 2017).

DISCLOSURES

Writing Group Disclosures

Writing Group Member	Employment	Research Grant	Other Research Support	Speakers' Bureau/ Honoraria	Expert Witness	Ownership Interest	Consultant/ Advisory Board	Other
Frank M. Sacks	Harvard School of Public Health Nutrition	None	None	None	None	None	None	None
Jennifer G. Robinson	University of Iowa Epidemiology	Amarin, Amgen, AstraZeneca, Eli Lilly, Esal, Glaxo-Smith Kline, Merck, Pfizer, Regeneron/Sanofi, Takeda†	None	None	None	None	Amgen, Eli Lilly Pfizer, Regeneron/Sanofi; Akcea/Ionis*; Merck*; Dr Reddy*	None
Linda V. Van Horn	Northwestern University Preventive Medicine	None	None	None	None	None	None	None
Lawrence J. Appel	Johns Hopkins University Medicine	None	None	None	None	None	None	None
Mark A. Creager	Dartmouth-Hitchcock Medical Center Heart and Vascular Center	None	None	None	None	None	None	None
Penny M. Kris-Etherton	Pennsylvania State University, Department of Nutritional Sciences	California Walnut Commission†; Ag Canada and Canola Oil Council†; National Cattlemen's Beef Association†	None	None	None	None	Seafood Nutrition Partnership; California Walnut Commission; TerraVia*; Avocado Nutrition Science Advisors*	None
Alice H. Lichtenstein	Tufts University Cardiovascular Nutrition	None	None	None	None	None	None	None
Michael Miller	University of Maryland	None	None	None	None	None	None	None
Eric B. Rimm	Harvard T.H. Chan School of Public Health	None	None	None	None	None	None	None
Lawrence L. Rudel	Wake Forest University School of Medicine Pathology	None	None	None	None	None	None	None
Neil J. Stone	Northwestern University Cardiology	None	None	None	None	None	None	None
Jason H.Y. Wu	University of Sydney/ George Institute for Global Health	None	None	None	None	None	None	None

Figure 5: Disclosure sheet from Sacks et al, 2017.

The commenter argues, ‘The AHA has a financial interest in promoting biased research that supports whatever nutritional narrative their “donors” wish to promulgate.’ The quotation marks around ‘donors’ implies that they are more than donors, and instead dictate the results of AHA research through their financial input. They continue, ‘In 1988 the AHA began allowing food companies to put the AHA “Heart Check” stamp of approval symbol on packaging, in exchange for cash with a yearly renewal fee of course.’ To this commenter, the fact of money changing hands renders the AHA’s arguments bunk. They go on to cite Conagra, Quaker Oats, and Campbell Soups as large lifetime donors to the AHA, and then argue that because coconut oil would never meet the requirements for being branded as ‘heart healthy’, nobody ought to trust the AHA.

Below this, another user quotes an article on the fiduciary interests of the AHA,

[in a] 2011-2012 financial statement, the AHA noted \$521m in donations from non-government and non-membership sources and many well-known large drug companies, including those who make and market statins, contribute amounts in the \$1m range. (Rosenberg, 2013)

Again, below this another user states, '**Bullshit** [emphasis original]. The AHA is bought and paid for by big moneyed interests and coconut oil isn't one of them and is in fact a threat to industrial oils and other fake foods. I believe absolutely nothing that the AHA has to say.' They go on to substitute their own embodied experience for the AHA's authority (a topic explored in Chapter 7) stating, 'I eat every single day about 4 ounces of coconut oil and butter and I occasionally get pulse rates **below** 50 and my lowest is 46.75, and I am **71 years old**. So when I say "bullshit" at the AHA and their fake facts, I actually have real facts to back it up with.' The implicit argument is that if the AHA were correct and coconut oil contributed to CVD, it would be impossible for them as a 71-year old to maintain a low pulse rate while also consuming a substantial quantity of saturated fats.

The arguments made above are subject to a number of responses to the vested interests arguments made by other users which contest their validity – or their strategic wisdom. First, a user responds to the lengthy comment about the AHA's donors and the heart-healthy certification programme,

MIKE 3 points

I wonder whether it's good practice to entirely dismiss all research that involves funding related to groups with conflicts of interest. There are ten authors here who listed no conflict, and two who did. If we take these disclosures at face value, why would the other ten authors and all three reviewers be willing to put their credibility on the line to go along with this conspiracy?

A lot of the research that's been done in these areas is horribly flawed, and this is likely no exception. But should we really expect scientists not to use and disclose industry grants, especially in this era of shrinking government support for scientific research? This strikes me as a decent batch of scientists who may have done some flawed research, which is certainly being reported terribly.

This view was mildly upvoted, though not to the same extent as the OP. The vested interests argument is not without its critics, including those who are concerned that its logical conclusion is to throw the epistemic baby out with the biased bathwater.

Similarly, responding to the comment about Proctor and Gamble a user asks, 'is a donation from P&G 75 years ago really the best evidence [the AHA are] biased?' The response comes, 'That just sort of sets the tone for the song they've been singing. The anti-fat movement has been incredibly damaging to society, and it helps to see the sort of influences these major players have.' The user, then, appears to understand the limitations of the argument they are making; however, when faced with commentary that goes against the core tenets of their diet, their rhetorical manoeuvre of choice is to critique the provenance of the information.

Regulating trust in drugs in r/nootropics

Vested interests arguments in r/nootropics tend to be deployed slightly differently than in r/paleo. I noted above that the primary areas of mistrust do still revolve in part around the medical profession, but also incorporate more personal connections with vendors and the nootropics industry due to the significant presence r/nootropics occupies within the cognitive enhancement ecosystem.

Trust issues in r/nootropics revolve primarily around the authenticity and quality of the products sold by vendors. In contrast with r/paleo, there are few instances in which users are forced to reckon with information or news stories that might invalidate their worldview *as a whole*, because the idea that one can use substances to change one's experience of the world is well-worn. Occasionally members might respond to a paper or media story that questions the efficacy or potential for side effects of a popular nootropic, but by far the largest set of vested interests arguments come when users are attempting to choose *between* vendors. One might consider this to dovetail with trust issues in r/paleo arising from the fact that users are confronted with a variety of diets to choose from, where actors may have vested interests in them choosing one over another.

r/nootropics users are leery of products where the majority of evidence for their efficacy seems to come from sources with a vested interest. A glib example comes from a thread where OP asks 'why aren't exogenous ketones and ketone salts talked about more here?' to which the response

from an experienced user comes, 'Because the last time they were discussed on this subreddit it was from a company that sold exogenous ketones for about \$35 a day.' As a more nuanced exploration of this phenomenon, a user posted a thread about 'Pulsed Electro Magnetic Field Therapy' (PEMF) in which they asked whether others had experiences with this particular kind of device, or whether there was further information available that might be useful to them. One user posts an interview with a doctor about the therapy, noting that 'the doctor makes a PEMF device so keep that in mind'. Another user posts a link to an article on a site run by Joseph Cohen, whom they say, 'has a lot of good material, but I find him far too pushy trying to sell me loads of things, which makes me suspicious of all his claims.' OP responds, 'Yeah this guy sounds like a crazy trying to sell you things for sure! ... But honest to heart I feel there is some sort of benefit, I feel much better, but it cost me like \$5000 and my parents initially bought it for themselves ... This shit better prevent cancer haha. I just feel that it's really good in helping me sleep and recover I guess but a few pills can do that too. I guess it's worth using.' In this instance, the vested interests of those attempting to sell the device are weighed up against the user's own experience, and their experience wins out. Whilst r/nootropics users are sceptical of claims made by people who have an obvious vested interest in the sale of a product, they will often subjugate these concerns to their embodied experiences if they are in tension with one another.

Competition between vendors

Given that the majority of competition in the field of nootropics is between vendors, it makes sense that vested interests arguments are primarily deployed in instances where vendors' interests are at stake. For example, in 2013 a moderator who owned a nootropics company posted a thread, warning users not to purchase from a particular supplier due to their wares causing a user to have seizures. In a continuation of the controversy explored in Chapter 5, the top upvoted comment asked whether it was not 'a major conflict of interest that a few of the mods own competing nootropics companies.' Other users note that 'many of us have ordered multiple products from [the "disreputable" company] over the years with no problems. Reddit can easily be gamed by a determined individual or group.' As analysed in Chapter 5, the subreddit moderators responded by attempting to make his involvement more transparent, placing a label next to his name indicating the company he owned. Other users also came to his defence, stating he 'only opened his store recently, and would have had no reason to falsify information'. Moreover, a partner of the moderator engaged in an attempt to demonstrate good intentions.

Much as paleo gurus make a show of how little they have to gain from their audience believing them, he argues that his primary interest is in ‘what the Nootropic Movement really stands for, where it’s headed, and what would serve it best.’ He says,

GUAC 3 points

[We] publicly stated beforehand that we wanted to provide a better environment for the nootropic community that existed before; How? One of the many ways we thought up was to create more easily COA [certificate of authenticity] standards for third party assays for noots that didn’t already have them. The consequence of doing so would open up the possibility of our competitors to use those third party COA’s, and we realised as nootropic users ourselves; that’s awesome! Not everyone goes with one brand. We want to help make it where it doesn’t matter which company you go with, just that you have the peace in knowing what you’re getting is what’s labelled.

Not only do they argue that they have the interests of the community at heart; they also point out that their actions are directly disadvantageous to them in giving their competitors the opportunity to improve their products without using their own money. This is one of the more effective instantiations of the rhetorical attempt to defend against a vested interests argument.

The discussion heats up further, as a redditor investigates and finds what appears to be evidence linking the accused nootropics vendor to another vendor, implying they are owned by the same people. The second vendor responds on longecity, the other large nootropics forum,

If the rest of the post is as full of misinformation as the part claiming that [we] are affiliated with [them] (which is stated without any reservation), then I would have to agree with [them] that some vendors appear to be on a rampage to smear their competitors with a callous regard for facts. In any case, if you want to order from [us] ... here is a 10% off coupon. You will see that the packaging is different, and the shipping and return locations are different. But don’t let facts and reality stop anyone from saying whatever they want about anyone on the internet. It never did before.

Who is the average redditor to believe? When vested interests arguments are levelled on both sides, it becomes difficult to attribute authority to either actor without some evidence of either definite lying from one party, or else a clear demonstration of what Goldman (2001) calls ‘dialectical superiority’: that is, having more detailed and quicker responses to your opponent’s arguments than they have to yours. Teasing out this particular controversy helpfully illustrates the difficulties r/nootropics users might have in deciding who to purchase substances from.

The episode above ends with the moderator posting, '[Vendor B] is not the same as [Vendor A]. it is run by an ex-girlfriend of the owner of [Vendor A]. They no longer have any business relationship with each other.' This post is supposed to allow the average r/nootropics user to establish who was factually correct, and therefore which vendor could be trusted.

The net conclusion here is that vested interests arguments are defensive manoeuvres adopted by members of r/paleo as a means of discrediting information that seems to contradict a core belief of the group. This information might come from a doctor, the media, or an institution, but in each instance the argument can be levelled that they are not to be a trusted source on the basis of their fiduciary or professional interests. In the case of r/nootropics, they also tend to be defensive, but instead of defending core epistemic tenets they are intended to protect users from harm, either in the form of dangerous or impure drugs, or else from unscrupulous vendors looking to discredit their competition. The fraught nature of the epistemic field in r/paleo and r/nootropics renders this kind of argumentation common. When evidence is lacking or contestable, interrogating the interests of those providing the evidence can provide closure to epistemic controversies that otherwise might be insoluble or threaten community harmony by challenging their epistemic foundations.

In terms of evaluating testimony, this is primarily a matter of sincerity rather than competence: the users are concerned with whether the information being provided to them is being produced and disseminated in good faith, or whether those creating and circulating it have reason to have produced falsehoods or partial truths.

With that said, the issue of competency is still salient. The AHA, for example, may well believe the research that they are producing and disseminating is correct (even if in the eyes of r/paleo users it is not) while the research may in fact have bias introduced without intent. Users of r/paleo and r/nootropics, then, also disbelieve contradictory arguments because those making it do not have the experiences they have, or the experiences they aspire to have. That is, they are considered to be subject to significant subjectiveness (because they are swayed by limited, biased evidence and are not prepared to listen to the other side of the argument) and do not have the kind of aspirational subjectivity that users seek in authoritative sources.

I say that this is *primarily* an issue of sincerity, then, because the users of both communities believe it to be so. They do not imagine that they are being deceived by people who are simply ignorant or incompetent, but by individuals, organisations, and institutions who are wilfully attempting to propagate evidence or worldviews that subverts their own conception of the world (in the case of r/paleo) or ability to navigate it safely (in r/nootropics).

The use of 'science'

What r/nootropics and r/paleo share is not limited to their platform and their communities' desire for self-improvement. Rather, they share an epistemic outlook: an attitude towards the accumulation, negotiation and dissemination of knowledge. This outlook lionises the *idea of science* as the best means by which the world can be understood. It is an outlook shared with much of reddit, but it is particularly important in these kinds of communities that have an epistemic mission at their core. Consequently, the means by which authority and expertise are constructed and negotiated are often inflected with, or directly draw upon, the trappings of scientific endeavour. In this section, I move through three different cases of this kind of discourse. First, I look at how users display and discuss their scientific credentials. Second, I examine the practice of using citations as a means of signalling depth and breadth of knowledge on a topic. Third, I analyse the use of scientific jargon, examining the extent to which this constitutes an authority-garnering strategy. Finally, I explore how the users of r/paleo and r/nootropics approach scientific studies, focussing in particular on r/nootropics users' tendency to methodologically dissect journal articles, and considering the potential causal factors that might account for the differences between the two subreddits in this respect. Readers may note that attributing authority to users who display or utilise scientific knowledge or wherewithal constitutes an appeal to both diminished subjectiveness and aspirational subjectivity: those with these epistemic skills are perceived as less subject to bias by limited evidence, as well as holding knowledge and/or skills that other users themselves wish to possess.

Credentialism

In forums like r/paleo and r/nootropics where there is an emphasis upon the trappings of scientific enquiry, one might expect to find that a significant proportion of claims of expertise hinge on, or at least refer to, the author's credentials. In other arenas where individuals' expertise is in question, their PhD or similar qualification might be referred to as a means of validating

their authority (Goldman, 2001). However, this brief section establishes there is little culture of credentialism in either forum.

The level of education in the two forums, particularly r/nootropics, appears to be high. The overwhelming majority of interviewees had a bachelor's degree or higher. It would also appear that there are a significant number of active users (those who regularly comment) who have degrees in biochemistry, pharmacology or a related discipline in r/nootropics, and some users with degrees in nutrition science or similar in r/paleo.

These degrees, however, are rarely touted as a sufficient reason to believe the claims being made by users in their comments. In the entire dataset, I found a handful of examples of this kind of behaviour. One comes from a user in r/paleo, who makes a large number of claims about metabolism, and says, 'I have a master's from a fabulous university with a huge and well-funded research lab that focuses on metabolism. ... I'm very sorry not to have links to studies handy. But I hope this was helpful anyway.' In this instance, he provides the information at the beginning of the comment in the hope that it will lend some credibility to the information that comes afterwards. Moreover, he does so as a *substitute* for citations or other devices that would indicate the scientific worthiness of his response. The section below will go into greater detail on citation culture specifically, but it is worth noting that his language indicates that having referenced studies would likely have been preferable to the format of answer he gave.

Some of the most highly respected users in both forums are no more educated than the rest of the community. SILVER, one of the most active and highly-esteemed users of r/nootropics, is occasionally asked about his credentials, as in this conversation:

COKE 3 points

I've read a few of your comments and they all seem rather shrewd and knowledgeable. Can I ask what your background is?

SILVER 14 points

Prepare to be disappointed. B.Sc in Applied Human Dietetics and then self-taught afterwards; no postgraduate credentials. I did become a research hermit for 7 years when working for Examine so I have that going for me though.

COKE 6 points

You worked for examine hey – very interesting. Think examine is one of the only places you can get some unbiased non-salesy zero-bullshit information about supplements. Much needed and refreshing.

SILVER's modesty addresses the imagined expectation that someone providing astute and well-researched answers is likely to be educated to postgraduate level. That he is educated only to BSc level is indicative of how nootropics as a field is highly amateur. There are few institutions actively conducting research into nootropic drugs *qua* nootropics, and there are no formal qualifications in the study of these drugs.

As we have seen with the treatment of medical doctors, r/paleo and r/nootropics are leery of epistemic deference to traditional modes of authority unless there is a specific reason that they might have knowledge of their subject area. That is, doctors are not assumed to have a high level of nutritional knowledge unless they are dietitians, and even they are viewed with suspicion. A similarly sceptical attitude is levelled towards degrees in STEM.⁴⁴ They are not viewed as granting expertise *tout court*; at most they are seen as an indicator that a community member is likely to understand how to read and analyse a scientific paper.

This attitude towards credentials is perhaps best encapsulated in a thread in r/nootropics, where the OP asks what kind of medical specialism would be best for someone hoping to specialise in nootropic medicine. A user claiming to be a medical doctor responds,

WORM 14 points

Answer is there is no formal training (MD or DO) in anything nootropic apart from the standard foundational biochemistry and pharmacology though this is really only taught in the context of FDA-approved pharmaceuticals. In terms of understanding neuropharmacology your best bet is probably either neurologist or psychiatrist though the average Dr even within these specialties is likely not going to have a good idea of the evidence for or against many of the nootropics discussed on this thread. You would really just have to find a practitioner that has an expressed interest in these sorts of things. Unfortunately a lot of those sorts of people also tend to have little pertinent training and tend to scam people.

Experience and interest, then, are seen as better indicators that somebody is likely to know what they are talking about than simply being in possession of a particular degree. The warning at the

⁴⁴ Science, Technology, Engineering, and Maths.

end of this comment is interesting, because it indicates that the user believes that practitioners who are interested in nootropics are unlikely to have ‘pertinent training’, and are more likely to ‘scam people’. Based on my understanding of r/nootropics, there are two possible readings of this sentence. Either the user is talking specifically about medical practitioners who have an interest in nootropics but do not have a great deal of understanding of them, in which case the message is a warning against trusting people who have ‘Dr’ before their name simply because of that fact; or, he is making the argument that those who are interested in nootropics but do not have ‘pertinent training’ ought not to be trusted. If the correct interpretation is the latter, then this would appear to be out of step with the dominant sentiment in r/nootropics, where qualifications and training tend to be deprioritised as necessary conditions for expertise. I would venture that it is likely the former, and that this is a warning against trusting credentialed individuals just because of their credentials.

A corollary of the comparative importance placed upon skilful articulations and mastery of the literature is that those users who are most likely to be listened to or imagined to be experts by the community are those who are best able to present information. This kind of descriptive depth might, for example, be achieved by highlighting particular fragments of a previous comment in order to ‘unpack’ them, or responding extremely quickly with a variety of sources seamlessly interwoven into one’s comment. A combination of these behaviours renders a user far more likely to be accorded expert status on the topic at hand, at least within the confines of that thread. Not only is their initial post likely to be upvoted, but they may also find that further replies they make to the thread are also upvoted even if they lack these qualities, having already gotten their invisible audience on side. Their interlocuters are less likely to be given the same positive treatment.

Users like SILVER are not only respected due to their understanding of the material, as one could have a great understanding without the capacity to communicate it to others. Rather, they garner respect due to their ability to quickly respond to other users with a comprehensive assessment of the available evidence. If they were in conflict with others, Goldman would call this kind of behaviour ‘dialectical superiority’, one of the main metrics by which lay audiences are capable of assessing experts (Goldman, 2001). Similar users and conventions around credence also exist in r/paleo, though the majority of examples in this section have come from r/nootropics. We can say with confidence that the rhetorical style of a user is an important factor in how well they are able to garner respect, credibility, and authority from an audience on

self-improvement forums like these. One might be surprised at the idea that *speed* is of the essence in garnering this kind of authority, but not only does posting quickly confer a *first mover advantage* (explored in Chapter 5), it also indicates to other users that the poster was able to access, synthesise, and relay information easily, another marker that they may deserve expert status.

Use of citations

In contrast with characterisations of internet discussions of self-improvement science that contend they are ‘a contest to see who could fish the most abstracts out of PubMed’ (Perryman, 2012), the relationship that r/paleo and r/nootropics users have with referencing external sources (particularly peer-reviewed journal articles) is complex and nuanced.

Citation scepticism

There is an abiding awareness, particularly among more seasoned members of the communities, that citing studies alone is not a sufficient condition for a claim to be credible. In the words of r/paleo interviewee AB,

When I see ‘experts’ on social media, in blog posts, or in a podcast, I don’t want to hear some study citer. I can cherry-pick studies to prove nearly any point I wanted to on nutrition like Ancel Keys and how he famously picked over the Seven Countries Study. I’m more likely to try something backed by some levelheadedness.

One of the foundational stories of r/paleo is that of Ancel Keys, who is cast as the arch-villain of twentieth century nutrition science. Keys’ work was seminal in the popularisation of the diet-heart hypothesis (that saturated fat is directly linked to heart disease) amongst the medical profession, policy-makers, and the general public. The paleo diet contains a large amount of saturated fat and eschews the ‘heart-healthy’ wholegrains that governments have promoted for decades. Consequently, as moderator interviewee JS put it, ‘you won’t find many kind words about Ancel Keys here’. The primary critique levelled at Keys is that he ‘cherry-picked’ his Seven Countries Study, which supposedly showed that saturated fat intake was positively correlated with higher rates of cardiovascular disease. Keys left out from his paper countries that did not fit with this conclusion. The aversion r/paleo users display towards simply citing studies is

grounded at least in part in the knowledge that conclusions can be manipulated like this, particularly given that this critique of Keys is made in more than one of the foundational texts of paleo.

Moreover, large amounts of evidence for the healthfulness (or otherwise) of particular diets, nutrients, or supplements, are produced in studies sponsored by associations or corporations who have a vested interest in those studies showing a particular outcome. Given that, we can understand further the scepticism with which r/paleo users treat 'study citers'.

Citations interacting with the web of belief

With that said, the *professed* epistemic outlook of an individual or group may diverge from the way in which they actually behave. In conversation with one interviewee (BC), I questioned whether he had been through the reference list of an article that he recommended to me. He responded,

When I posted that link, I did consider the fact that I hadn't been through the reference list. I think having it there does make me more inclined to read/believe what it says, but if something that I read alarms me, I will track down the reference for more info. Referencing is a security feature that isn't always used by the reader, and even then it isn't always reliable, but having it there makes an argument more transparent by showing the audience what they are basing their information on.

BC notes that he may well be predisposed to be more credulous of an article or study by dint of its inclusion of references, but that this is unlikely to make a significant difference to his overall behaviour. The reason for this is that he only digs down into the references if he reads something that 'alarms' him, and so what is contained in the reference list is only important if the article is making claims that clash considerably with his pre-existing web of belief (Hesse, 1974; Quine and Ullian, 1978). This is consistent with the tenets of meaning finitism, whereby our previous conceptualisations of the world inform our future understandings, and often only an unexpected piece of information can, under specific circumstances, result in the shifting of core parts of our conceptualisation (Barnes et al., 1996).

To corroborate this conception of how citations operate on an epistemic level, it is worth quoting my conversation with another interviewee, female r/paleo user SM. When asked about her attitude towards references, she gives a candid answer:

I honestly have only read the abstracts on several. And read blogs. I haven't really gone through all of the studies or read the actual test cases, etc. beyond just finding out (how many participants were involved, were women included, was it really paleo as I define it or some low carb amalgamation, was it low carb or middle carb paleo, etc. what was the control group doing, etc.). I don't read read. I skim. I admit, I read with bias towards what I want to see (that I am doing the right thing already).

SM's conception of not reading an awful lot involves putting in significantly more work than many people who claim that they know what they are talking about. However, more important for our purposes here is that she primarily reads studies with a view to finding significant 'red flags': methodological issues that might mean that the results of the study ought to be disregarded for her own purposes. This is similar to the way in which BC approaches reference lists, using them to prevent himself from going astray rather than as the backbone of his approach to evidence. SM admits that she 'reads with bias towards what I want to see (that I am doing the right thing already)', lending further weight to this argument.

Users tend to more actively examine citations when the stakes are higher. For example, in the paleo community there are a large number of people who purport to be 'gurus'. Gurus cultivate an audience for themselves and make a living through them (e.g. through selling books, sponsored posts, advertisements, or merchandise) in the manner of Turner's 'Type III' expert (Turner, 2001). Type III experts are not *intrinsically* seen as an expert by dint of their credentials, but are able to create audiences for themselves through their actions and words. r/paleo users will often base their own diets off of the recommendations of these gurus. In comparison to deciding whether to give credence to one particular claim, making a decision to change one's diet has a higher cost in terms of time, effort, and finances. Consequently, users are more likely to examine the references these gurus use in order to decide whether they are – if you will pardon the pun – kosher. A good example of this comes in a thread entitled, 'Does anybody eat a Ray Peat inspired Paleo?'. The top-upvoted response comes, 'Multiple times people have posted pieces of his writing here, and I found the citations to be incredibly weak, dodgy even. He plays the "rebel who finds the truth" gag way too hard. Hate to sound "gatekeeper-y" but unless bound to heavy caveats, anyone recommending long term avoidance of fatty fish/DHA is hard

to take seriously.’ It is likely that in this instance the user has seen that Peat makes recommendations that contradict some popular paleo advice, and has consequently decided to dig into Peat’s citations. He finds them wanting, on the basis that they are *too radical*. There is a fine line to walk as a paleo guru: adhering to conventional nutritional wisdom will not gain you any followers, but being too ‘out there’ (a vague and slippery concept to quantify) is likely to set off red flags, too. Even here, though, the process by which Peat is assessed adheres to the procedure set out above: something he says seems ‘off’, leading to further investigation, at which point the quality of his references is assessed.

Can citations change minds?

All of the above examples deal with a system of belief-formation that essentially proceeds like this. Someone reads a claim. If the claim coheres with their existing beliefs, they process it unproblematically. If it does not, then they look for additional sources of evidence that might back up the claim. If there are citations embedded in the content, they read them. If they find the evidence wanting (which can happen for any number of reasons), they likely reject the claim. What happens, then, if they cannot find specific fault with the evidence – that is, can citations change an individual’s mind?

In some instances and for some people, the answer appears to be ‘no’. For example, in a thread about a ‘100% carnivore diet’, in which individuals eat only animal products, there is an argument about whether this is a sustainable diet. The conversation proceeds like this:

CAR 4 points

100% carnivore diet? I hope you enjoy your last couple of weeks with him before he dies of ammonia poisoning.

NOPE 4 points

Inuits seem to be doing just fine.

CAR 1 points

Inuits don’t have 100% carnivorous diet.

VIC 1 point

N*gga please <https://thenortheasttoday.com/anderson-family-on-meat-diet-for-17-years/>

CAR 1 point

I would say they’re lying

VIC 1 point

Yeah bro it's just a huge lie and coverup. No way people could exist beyond your rudimentary understanding of dietetics. [several links to communities and individuals who live on zero carb/carnivore]

This is not the end of the exchange, but neither party moves, and neither of them is significantly upvoted (primarily because this is a long chain of replies which happened some time after the thread was posted). Even in the face of evidence that a diet might be tenable, user A would prefer to claim that the dieters claiming they were '100% carnivore' were lying rather than slot their existence into his web of belief, perhaps precisely because he cannot do this given his pre-existing beliefs. User B then appeals to what Collins and Evans would call a 'sociological' explanation, arguing that it is implausible that so many people could have coordinated a lie of such a large magnitude and longitude (Collins and Evans, 2007). In some instances, then, citations with no obvious flaws cannot make a difference to belief formation.

In other instances, though, citations make a significant difference. Whether this is likely to happen is often signalled by a user directly requesting evidence, showing that they are open to having their mind changed. Whilst in some instances this might be a bad faith request (as the user believes such evidence does not exist, or they wish to dismiss it out of hand), in the context of r/paleo and r/nootropics where there is an emphasis on sceptical enquiry as a value to aspire to, they are more often than not genuinely attempting to establish the evidentiary backing for a claim. For example, a user in r/nootropics attempts to ascertain whether taking the supplement BPC-157 would be more effective if it was cased in enteric capsules, changing the method of delivery. One user asks, 'why do you think it would be more effective?' and adds four links to PubMed abstracts which indicate BPC-157 could be administered orally, systemically, or locally. The response comes, 'Because I think that stomach acid damages the peptide. I'm not sure, I'm just guessing. I do know that subcutaneous injections seems to work much better than orally, so I'm guessing that's why.' The first user responds, 'It's stable in stomach acid. It's being studied to treat ulcers. From examine.com: "BPC-157 is freely soluble in water of normal pH value. The pentadecapeptide sequence is Gly-Glu-Pro-Pro-Pro-GlyLys-Pro-Ala-Asp-Asp-Ala-Gly-Leu-Val and is stated to be quite stable relative to other peptides by not degrading in stomach acid (ex vivo) for at least 24 hours. Protective effects of pentadecapeptide BPC 157 on gastric ulcer in rats.'" The OP capitulates, saying, 'Oh. I guess I have more research to do. I guess I don't understand why injections seem to work so much better.'

In this example, OP has signalled that they are open to having their mind changed by posting the topic as a question to begin with. Moreover, they signal epistemic modesty in the context of their replies, explicitly saying they are ‘just guessing’ on the basis of what they already know about the behaviour of other materials in the stomach. Their interlocuter, in addition to citing a large number of sources, directly quotes from examine.com (widely lauded as a reliable, unbiased source of information). This likely does them significant good in having their claims believed.

A further illustrative example also comes from r/nootropics, on a thread about the potential cognitive benefits of video games. A sceptical user comments, ‘Dancing aimlessly for 10 minutes is still arguably healthier for your brain and body than 100 minutes of coordination puzzles.’ Without any form of evidence, the user is in trouble with others who might be invested in the idea that video games can provide this kind of benefit. One user responds, ‘Care to provide any evidence to back up your conjecture? I study game design and love reading psych and this comes off as hugely arrogant.’ The first user responds with three different studies. They argue that there is little evidence that ‘[video game brain training] generalises to other tasks or to real-world performance’; and further,

The researchers suggest that video games could be therapeutically useful for patients with mental disorders in which brain regions are altered or reduced in size, as in schizophrenia, post-traumatic stress disorder, or neurodegenerative diseases such as Alzheimer’s dementia. My personal opinion is based on experience as someone who also studied game design, prez of my university gamedesign club, has made a few shitty games myself, but couldn’t handle the depression and now works as an outdoor sports teacher is that video games are depressing the world but provide a great imaginative world when you don’t have a better option.

In this response, the user has provided a significant amount of evidence to back up their position. The response is lukewarm: ‘Awesome, thanks for all this. I can’t agree with your personal opinion – guessing that your withdrawal into gaming due to your depression informs a bias against all gaming – but I can definitely appreciate where you’re coming from.’ The overarching narrative of this exchange is that a user whose core (pro-game) beliefs were being threatened was given evidence that suggested the threat may not be entirely nonsense, but they were only willing to partly credit the information in front of them, waving away the core argument by dismissing their conversational partner as ‘biased’. In this encounter, implicit qualified concessions are made, but the second user stops short of accepting the argument of the

other. My explanation for this is, to reiterate, that to accept the argument would have been to allow into their web of belief ideas that are incompatible, or at least in tension, with their identity as someone who believes that video games are a force for good in the world. This nicely underlines the argument I have made throughout this section.

The net conclusion of the above is that we can understand citations not as a desideratum of credibility in and of themselves, but rather as one part of the informational landscape that might allow the sceptical reader to understand the extent to which there is evidentiary backing for the claims they are reading. In some instances, a sufficient number of citations of what is deemed to be an acceptable quality may be enough to change an individual's mind. However, it is unlikely that this happens through the *shifting* of their internal paradigm; rather, it is likely that the new information has been (or can be) made to cohere with their existing core beliefs. Alternatively, it may be that they are forced to abandon *some* ancillary hypotheses or background beliefs in order to make room for ideas that are seemingly contradictory. In all of these instances, citations play a role in increasing the credibility of potential alternatives to one's pre-existing beliefs.

Methodological critiques

The section above lays the groundwork for a discussion of the ways in which users of r/paleo and r/nootropics analyse and critique scientific evidence. Whilst there is some superficial discussion of methodological engagement above, this section will explore the structure and function of how this engagement is leveraged in a more substantive way. Methodological critiques function on two main levels: as a check on over-exuberance, deflating hyperbolic claims; and to provide foundations upon which knowledge can be built. The first use is to 'burst the bubble'; that is, when somebody has posted a finding which appears to be too good to be true, there is likely to be a user in the comments section demonstrating precisely why that is likely to be the case. In the second use, methodological critiques delimit what can and cannot be inferred from a single study's conclusions, and this allows users to formulate the degree of certainty with which they should treat it. In some instances, this allows users to avoid potentially harmful behaviours, whilst in others it can help them to decide whether to self-experiment with their intake or supplementation on the basis of a study. This in turn reinforces the underpinning ideas of the community, preventing contradictory evidence from undermining group consensus over knowledge.

Bubble bursting

The first use I outline above is in ‘bubble bursting’. Here, a user posts a study or article that makes a claim that appears highly positive or negative, e.g. that a particular supplement or nutrient has extremely beneficial effects or, conversely, that it is very dangerous. In either instance, the methodological critique is leveraged as a means of preventing these potentially hyperbolic claims from being accepted by the wider community.

For example, r/nootropics had a thread submitted entitled ‘Autism’s social deficits are reversed by an anti-cancer drug’. This claim, if true, would be hugely impactful. However, one user posts a measured, sceptical response:

CHAIN 3 points

The key takeaway here is that before anyone starts chronically popping HDAC inhibitors, they need to be evaluated for safety in animal models, and then clinical trials, because you never know what cells may be affected by the inhibitor. The discussion talks about this rather explicitly, there’s still hope HDAC inhibitors are helpful in some contexts, but not where there’s tremendous potential for catastrophe. Therefore identifying which ones, and how they will be applied needs to be very carefully studied.

The gist of this is that the drugs in question have not yet been evaluated for safety in either animals or humans, and also that this study refers to an entire *class* of drug, meaning that the specific drugs and dosages have not been worked out. The consequence for the users of r/nootropics is that they should not be ‘chronically popping HDAC inhibitors’. This last is not meant flippantly: r/nootropics members are in the business of acquiring and taking untested and undertested drugs, often illegally or off label, as a means of altering their cognitive state. There is a genuine chance that users will attempt to acquire these drugs and use them to treat autism unless they are suitably warned.

It is worth noting, however, that this kind of critique is still vulnerable to responses. As I have argued above, users are likely to demand evidence, and critically examine provided evidence, in contexts where a claim threatens their core beliefs. The example to come is no exception. In another r/nootropics thread, a user asks, ‘Has anyone had experience in using BPC-157 orally to cure depression?’ This is a question that provides ample opportunity for bubble bursting, given that it is framed in terms of ‘curing’ what is for many a chronic or even lifelong condition.

Predictably, a user responds, 'You shouldn't expect anything to cure depression, and as a user of BPC-157, I am not sure where these ideas about it curing depression are coming from. That being said, healing peptides make you feel good, and help motivate you to exercise and eat a little better.' The user not only bursts the bubble, but attempts to manage expectations further by providing an indication of what OP might actually be able to get out of BPC-157. However, another user responds negatively to the bursting of the bubble:

VOL 12 points

I'm going to be frank. Almost everything you said is wrong. I see this stuff all over the sub. Upvoted responses with no citations and straight wrong information. My main two gripes with response are as follows: 1st: BPC-157 is stable and active in the gut and its gastric juices for more than 24 hours. It is highly effective dosed orally. [link provided] 2nd: BPC has been shown to balance the brain-gut axis as well as exert anti-depressant effects. [links provided] Of course, I agree we can't hope for a pill or a peptide to magically heal us, and we must put in the work alongside our supplementation to see lasting change.

This user provides PubMed links to buttress their claims of the benefits of BPC-157, also engaging in expectation management by adding that 'we can't hope for a pill or a peptide to magically heal us' and emphasising the importance of work. They also attempt to defeat their conversational partner by pushing them on references, indicating that because they have 'no citations' they are not to be trusted. I argued in the section above that citations are often treated as an optional extra unless a user is sceptical of another's claims. Here we can additionally note that a *lack* of citations can be used as a cudgel with which to beat one's opponent, supposedly demonstrating that they do not know what they are talking about because they have no evidence to show for their position.

This is not quite the end of the interaction. In a comment that garners at least one downvote, putting it on 0 points, the first user responds, 'God knows why you're being upvoted, that study makes no explicit conclusion that BPC actually would have any antidepressant effects in rats, let alone humans.' Again, they attempt to burst the bubble through methodological critique, arguing that the inference is invalid both because of the lack of explicit conclusion and the study being done in rats. Finally, the second user responds, 'I guess we're not reading the same studies,' and quotes part of the study, concluding, 'The data is limited but promising. Certainly not dismissible.' This exchange demonstrates the way in which methodological critique can be used both to dismiss and reconstruct the validity of evidence. In all instances, this validity is open to

reinterpretation and challenge. In some cases, there is a clear ‘victor’ who is heavily upvoted for demonstrating their dialectical superiority. In many other cases, no such winner is evident: the conversation abruptly ends as one of the users logs off or fails to respond.

Nuancing inferences

The second use of methodological critiques is in developing a greater degree of nuance in the kinds of inferences one can (or ought to) make on the basis of a given study. The difference between this and bubble bursting is that while bursting bubbles is usually an attempt to prevent hyperbole being taken seriously, nuancing inferences is more fine-grained or open-ended. It leaves the bulk of any given argument or claim intact but makes alterations which allow users to understand precisely what they ought to take away from the study. Moreover, this facilitates the construction and maintenance of a foundation upon which shared knowledge can be built.

A good example of this phenomenon comes from a thread in r/nootropics entitled, ‘Are any medicinal mushrooms safe for long term supplementation?’ SILVER, an extremely experienced and well-respected user, responds to the question by noting that there are different kinds of mushroom extract, and that this influences whether effects seen in studies are applicable:

SILVER 3 points

The DHT inhibitory properties are seen with ethanolic extracts of Reishi, not water extracts which are in most supplements these days (at least, not the tinctures). If you’re taking a supplement with 1g+ Reishi it’s most likely water extract and you’re fine on the DHT issue.

OP responds to SH with a request for ‘any studies or papers showing this to be the case’, as is standard practice when another user has challenged your conception of the evidence. The response from SH deftly synthesises the available information:

SILVER 1 point

Well, all in vitro studies on DHT and 5-AR are done with the fat soluble components (check section 9.1 on the Examine page for the studies in question. Now, the ethanolic extract (at 6mg, standard dose for this stuff) is not super duper potent by itself. ... And if we look at studies assessing in vitro DHT potential they opt for ethanolic and methanolic extracts where ‘potency’, in this study in

particular, is an IC50 of 93uM (for comparison, finasteride was 0.73uM in the same assay). So even when it works, kinda weak. ... So sorry for rambling and being unable to answer your question directly ... Cannot prove yet cannot disprove but it seems unlikely :/

Note the difference between this kind of critical engagement and the bubble bursting, above. Whereas in a bubble bursting context users have a tendency to attempt to dismiss claims completely, in this more nuanced context they are more likely to hedge their claims. Whilst the argument is still clearly articulated that the effect OP is looking for is unlikely to accrue, SILVER is honest about sources of uncertainty.

This very acknowledgement of uncertainty is likely to function (albeit unintentionally) as a mechanism for garnering authority: when a user states the evidence in front of them but does so whilst also showing the limits of their knowledge, others in the forum are more likely to trust and respect them (Halavais, 2013). In interviews, one of the key traits that interviewees looked for in a trustworthy expert was the capacity to change their mind in the face of countervailing evidence, and to acknowledge when they were incorrect. This is another instantiation of a general inclination towards epistemic modesty as a marker of trustworthiness as a source.

To further illustrate this kind of methodological critique, we turn to another r/nootropics thread, discussing a paper entitled 'Curcumin reverses impaired cognition and neuronal plasticity induced by chronic stress'. In the thread, users are discussing the appropriate dosing of curcumin to obtain the therapeutic effects. One user gives a lengthy, nuanced critique of the available evidence:

MAD 2 points

This is based on some crude back of the napkin math, so take it with a grain of salt, but looking at a commercially available product with good bioavailability, like a micronized curcumin, 30mg of the formulation would yield around 0.045microM circulating curcumin (again, very rough approximation). In most pre-clinical studies, the majority of the beneficial effects of curcumin are observed to take place within the 110 microM concentration range (a big range, and based on a lot of in vitro data too). So in theory, 90mg of the formulation should start to produce observable effects. And a recent study did actually confirm this dosage (although it was taken twice daily, so not sure how that would impact Cmax values):

<https://www.sciencedaily.com/releases/2018/01/180123101908.htm>. So that would probably be a good place to start, but again, take that with some salt.

Note once again the epistemic modesty of the user, who claims that their quite complex argumentation is ‘crude back of the napkin math’. This is precisely the kind of nuancing critique that performs well in r/nootropics, usually garnering upvotes (or at least avoiding downvotes in a situation that is often fraught, as users are being questioned on the validity of their claims). At least one study is referenced, but the user also demonstrates that they are aware of and can synthesise the necessary literature on demand. In this instance, the lack of references in the main body of the comment may even *increase* credibility, because it indicates that the user is not, as one interviewee put it, ‘just some study citer’, but has the ability to articulate arguments and numbers from memory, whilst indicating the limits of their own knowledge. This is an effective method of garnering authority in these communities, measured in terms of building reputation and gaining upvotes.

Boundary work

In any community with some form of epistemic project, it is important for members to police what kinds of knowledge are accepted (Gieryn, 1983). That is, if we accept the idea that knowledge is simply that which is believed by a group (Kusch, 2002) then the corpus of group beliefs must be guarded and bounded in order to prevent that knowledge from being corrupted. That corruption could come in the form of beliefs which are antithetical to the goals of the group (e.g. r/paleo taking on beliefs which meant their members gained undesired weight, or r/nootropics holding beliefs which led to cognitive decline). Alternatively, it might come in the form of beliefs which contradict existing beliefs, creating tensions in community knowledge which may undermine their capacity to gain or keep members. This latter might be exemplified by paleo communities struggling to reconcile the superficially competing claims that humans have not had enough time to adapt to post-agricultural foods, but also that there is a significant proportion of the population for whom dairy is not problematic as a food.

There are numerous ways in which the boundaries of knowledge are policed, reinforced and contested in both r/paleo and r/nootropics. The argument I articulate here is that users engage, both consciously and inadvertently, in the construction and maintenance of boundaries around beliefs held by the communities. These boundaries are subject to question and negotiation, and in some circumstances may buckle under competing epistemic pressures. This latter phenomenon is instantiated in the r/paleo community, where I argue that the influence of

market forces and epistemic tensions has resulted in a collapse of centralised authority, which in turn has made it harder for the community to recruit and keep members. This links back to the discussion of the platform dialectic in the previous chapter: moderators of r/paleo have to be more careful than those of r/nootropics (who are in a comparatively secure position) about how they deploy the powers available to them in order to ensure that they do not alienate users through perceptions of overreach or gatekeeping.

The role of imagination as evidence

One important role played by boundary work in the discourse of r/paleo in particular is through users' creating and contesting images of what nutritional intake in the paleolithic era 'would' have been like. Expanding on the work of Christine Knight (2015) which deals with how low-carbohydrate dieters respond to the concept of 'nutritional primitivism', I use the term 'paleolithic imaginary' to describe the ways in which users mobilise imagined conceptions of the nutritional intake of paleolithic humans in order to cultivate credibility and authority. This section takes the form of exploring two in-depth examples of this form of reasoning, illustrating not only how it can be used but also the vulnerability it has to objections which pivot on the same fulcrum of historical plausibility. I introduce a further concept of the 'nootropic imaginary', which plays a role in the discourse of r/nootropics. These come in two forms: first, a largely derided form in which users describe euphoric experiences. This kind of imaginary is an indicator of a user who is inexperienced and ought not to be given credence. The second form of nootropic imaginary revolves around biochemical and neuroscientific speculation about the mechanisms of drugs, and is used to varying effect as a means of establishing the credibility of an argument.

First vignette: how much fruit is paleo?

For example, a user who complains of craving fruit when transitioning from a keto diet (which does not allow fruit) to a paleo diet (which does). She asks whether there is a 'biological/scientific' reason for these cravings, and whether they might disappear. She receives responses which explain her issue in terms of whether she is *actually* eating paleo, invoking multiple conceptions of what it means to eat paleo. First, a user says:

Something to consider is that in 'Paleo' days fruit would have been limited to a short period of time at the end of a growing season. Maybe a couple weeks?

People have greatly increased the sugar in fruit over the past couple hundred years by selective breeding.

So now you are faced with the double whammy of super sugary fruit available 24 / 7 / 365. That's far more sugar than the Paleo folks had access to.

They argue that fruit would not have been perennially available during the paleolithic era, and that its ubiquitous availability today accounts for some of the issues she is having. Another user then points out that the first's analysis would not apply for all populations, to which a further user responds,

I think this brings up a good point that ancestry matters. If your family line is from the equator where fruit is plentiful and generation after generation ate high fruit diets you're probably better evolved to eat more fruits than say someone who's family line runs in Ireland.

OP responds that her family is from the Mediterranean, to which the user posits, 'Your body has evolved over hundreds (maybe thousands) of years to eat a certain way but you're still trying to push paleo on to it. Now paleo is healthy (I believe) no matter what but might not be optimal (make you feel the best) for you.'

Second vignette: questioning the legitimacy of food choices

A recent article details the release of 'Superfood Paleo Donuts in Brooklyn' (Abrams, 2017). The production and consumption of 'Paleo junk foods' is a controversial issue in /r/paleo, where recipes and articles about them are often highly upvoted, only for the concept itself to be heavily criticised by users in their comments. This thread is no exception, with one user in particular commenting multiple times to argue that consuming sugar in large quantities, even in the form of honey, is definitively *not paleo*.

DIED – 1 point

I'm sure natural sugars like honey are technically 'better' on some level than a bag of refined white sugar, but none of it stops sugar in that density being an incredibly rare thing to find as a Paleolithic person.

You think they were even going near beehives most of the time? Sure, there was probably a 'someone hit it and run the fuck away' tactic going on, but hives are rare, hard to get to, and have a very obvious defense mechanism.

The story here is: sugar in the density of even a 'natural' form is still very rare in nature. It would have been a rare and often seasonal treat. If you do 'Paleo' just eating fruit covered in honey, you're going to be in as bad/worse shape as someone eating the SAD.

edit: if you're downvoting me because you like putting honey in every hot beverage you drink, and can't deal with the cognitive dissonance of this not actually being 'paleo', you have issues.

The user ends their contribution to the argument by telling their opponent, who has just asked for citations as to how honey might be harmful, that 'I don't care enough to go full redditor and find journals for you; you can do your own research if you want ... My point is really that anyone claiming to be eating Paleo should be eating honey *very* rarely.' Not only do they utilise the imaginary to deride a current trend in paleo, they also mock the convention of googling to find multiple citations, indicating that the argument is so intuitively correct that it needs no external evidentiary backing.

These interactions illustrate in detail two things: first, it indicates the perceived importance users place upon their capacity to imagine and articulate understandings of what a paleolithic person's nutritional intake looked like as a means of justifying their arguments. Second, it highlights the difficulties experienced when attempting to use boundary work as a means of policing the content of a paleo diet. Because there is no evidence that the diet of our paleolithic ancestors was homogeneous across time and geography, arguments which rely upon defining down what gets to 'count' as paleo tend to draw upon one's imagination of the paleolithic era, which means they are vulnerable to responses which draw upon competing imaginaries.

Nootropic imaginaries

The use of imaginaries is less explicit in r/nootropics than r/paleo, but arguments rooted in speculation about particular mechanisms which extrapolates from limited knowledge are extremely common. This kind of nootropic imaginary – which I call the ‘Limitless imaginary’ – acts as a signalling mechanism to indicate that a user is aware of the conventions of the subreddit, indicating that someone does or does not know what they are talking about.

In the 2011 film *Limitless*, a nootropic drug named NZT-48 allows characters to surpass their normal cognitive limits and function at a higher level, bringing them riches and success. The concept of NZT-48 has become something of a *bête noir* for the r/nootropics community, bringing in many users who hold misconceptions of what nootropic drugs are currently capable of doing. In 2017, they experienced another influx of users after *Limitless* was remade as a TV series, with one user complaining that a significant problem with the community is ‘the lack of effort and research from newbies who just discovered the show *Limitless* (which *plainly mentioned modafinil* [a popular nootropic] in one of the first episodes)’. Users who describe themselves as experiencing ‘god mode’ or similar are often marked out as newbies who may be experiencing significant placebo effects. Alternatively, as an interviewee informed me, they may be asked whether they are having a manic episode, only half-jokingly. In a post by a moderator of r/nootropics seeking to stem the tide of users posting about modafinil because, ‘this is a place to advance our knowledge of all nootropics, not simply beat the latest popular one to death,’ he states, ‘It is not a miracle drug for improving cognition. There is no such thing. I’m sorry *Limitless* has misled you.’ The implication, then, is that newcomers who have inflated expectations of the capacities of nootropics to change their lives can be marked out by their hyperbolic imaginaries.

Conversely, when tempered with sufficient indications that a user knows what they are talking about, the Limitless imaginary can instead function as a description of the ideal state which nootropics may be able to induce. One user expresses frustration that their stack occasionally makes them ‘feel almost “limitless” some days and other days my mind is trudging through mud’. The imaginary here functions as an indicator of a common goal, a shared understanding of a potential cognitive state. This is important, given the difficulties inherent in attempting to describe one’s cognitive state in a way that is comprehensible to another. The Limitless imaginary, then, operates as a *trading zone* (Galison, 1999): a place in which differing experiences

and conceptions of a phenomenon can be exchanged in a way that makes sense to all parties. In r/nootropics, individuals with different understandings of similar cognitive experiences are able to coordinate upon one set of phenomena with the aim of inculcating understanding of a shared aim and set of possibilities with respect to what can be achieved with nootropics.

The second form of nootropic imaginary is biochemical. Given the paucity of high-quality evidence for the mechanisms of action, efficacy, side effects, and drug interactions of various nootropics, redditors move towards speculation as a means of filling in the gaps in their knowledge. Both interviews and internal polling of r/nootropics suggest that the population of the subreddit is on average highly educated, with a significant proportion of active members holding degrees in STEM subjects. Consequently, the kinds of explanation which end up being rewarded for why nootropics *may* have particular effects in *some* people are often those which refer to biochemical or neurochemical phenomena. These often incorporate hedging techniques, such as saying ‘I’m not an expert but...’, and they will often mark themselves out specifically as speculation, offering up reasoning rooted in an inference to the best explanation or abductive reasoning mould (Lipton, 2017; Peirce, 1957), wherein a complex set of inputs (and often outputs) are used to infer to what seems the ‘most reasonable’ interpretation of a phenomenon. The examples here are complex, but worth exploring in detail in order to understand the modes of reasoning commonly employed in r/nootropics specifically as they pertain to boundary work around nootropics and their effects.

First vignette: acetylcholinergics and mood

OP notes that they suffer from issues that would be solved by both antidepressants and cholinergics (low mood and brain fog) and asks whether they would be able to take them both together, since, ‘It seems like antidepressants and cholinergics oppose each other in mechanism of action!’. What follows is a lengthy exchange between OP and another user who, in OP’s words, ‘knows their shit’. The explanations he (and it is highly likely a man, given the 90% male composition of r/nootropics) uses rely upon an understanding of mechanisms of drug action as the foundation for an answer which essentially tells the OP that their worries are unlikely to obtain. He says, ‘Only a few antidepressants target receptor systems whose endogenous ligand is acetylcholine. Most of the tricyclic antidepressants are muscarinic receptor antagonists.’ After further elaboration on drugs that may act in the way OP is concerned they will, he adds, ‘Clinical classification is defined by outcome, not pharmacology. While the pharmacodynamics of a drug

often offers clues as to its clinical effects, do not get so hung up on things like binding affinities that you write off a drug's efficacy for a given indication.' This explanation is essentially, 'the way that you are imagining these drugs function is incorrect, because their classification hinges on their effect rather than their mechanism. You should instead imagine them in *this* way,' followed in his next post by an example of how interactions between two different drugs might cause a *shifting* of signalling towards one system rather than another, instead of cancelling one another out. Here, the biochemical imaginary is used as a reasoning exercise, a way of creating concordance between the OP and the respondent.

Second vignette: OP's corticosteroid problems

In a second example, OP shares a number of links suggesting that nasal corticosteroid use can cause a number of issues. The first respondent uses a similar but simpler chain of reasoning to the example above. They say, 'I notice [corticosteroids] cause short-term memory impairment for me. I vaguely recall reading they have a negative effect on the hippocampus'. They share two links to journal articles. The reasoning they employ is that they have experienced a phenomenon when using a drug, and they imagine that this experience must be from an effect that they have read the drug has. OP responds, 'I tried nasal spray 3 times and each time had the worst effect.' They go on to describe hypomania, depression and suicidal thoughts. The respondent replies that they do not believe all of these issues can be attributed to the spray. The final reply from OP engages in significant biochemical imagination:

ANS – 1 point

Don't forget that nootropics through the nose go directly to the brain. Therefore, these hormones are there. According to research, manufacturers check only the systemic blood flow. The instructions say that the concentration of the substance in the systemic circulation is very low. Of course, because everything is in the brain!

Here they utilise their understanding of the route of action of the drug to explain their symptoms. Other users in the thread speculate that OP's problems are caused by corticosteroids suppressing the oxygen content in the hippocampus, suppress testosterone in the long term, or alternatively that they have given themselves 'adrenal fatigue'. None of these explanations are particularly sophisticated, but they employ the biochemical imagination of each user, who takes

the limited evidence in front of them in order to make an abductive leap to a particular conclusion. The most highly upvoted arguments of this kind, as one might expect, tend to be those made with significant sophistication and clarity.

The unifying factor in the construction of imaginaries in both r/paleo and r/nootropics is their aim of reducing ambiguity. With the possible exception of one interpretation of the Limitless imaginary, which can signal that a user does not know what they are talking about, all of the paleolithic and nootropic imaginaries are utilised primarily as a means of resolving epistemic or cognitive issues. The paleolithic imaginary aims to create unity of belief in what the paleo diet *should* look like. The Limitless imaginary functions as a trading zone, reducing ambiguity over what the *ideal* effects of a nootropic regime might be for people with vastly disparate cognitive experiences. And the biochemical imaginary acts as a means of ‘filling in the gaps’ where the mechanisms of action of a supplement or drug upon the body, and the consequent physical and mental phenomena, are not fully understood. In most instances, then, the imaginary functions as a mediating mechanism in areas where epistemic controversies are extant or potential. These mechanisms are used to do boundary work, delimiting what can reasonably be claimed as an effect of a drug or dietary change, as well as placing limits around what people are able to call paleo or a nootropic without challenge.

Hedging

One of the key rhetorical moves made by redditors is ‘hedging’, also known as ‘YMMV’ (your mileage may vary). This is a way of indicating that whilst something was the experience of one individual user, this is in no way indicative of what others may experience if they perform the same actions. Halavais (2013) notes that this is a behaviour endemic to r/nootropics, where ‘[users] made clear the limits of their own experience by providing a “disclaimer” indicating it was “just” their personal experience’.

Whilst Halavais notes that this move, which could be summarised as saying ‘this is what works for me’, is not common in the most popular self-improvement subreddit r/fitness, my own research in r/paleo suggests the practice is not confined to r/nootropics and is in fact a common instantiation of behaviour that tends to garner authority from others through aspirational subjectivity. I coded thirteen different threads in r/paleo with the term ‘individualisation’, indicating there was significant discussion of the variance between individuals.

Some examples follow. First, in response to a question about the frequency of meals and snacks required to both lose weight and maintain ‘stability’, a user responds, ‘It depends entirely on the individual.’ They elaborate on their own routine, outlining that their meals may vary but that they always add up to their TDEE (total daily energy expenditure, a commonly used metric in self-improvement communities which indicates how much energy an individual uses in a day, accounting for both their BMR - basal metabolic rate - and their activity levels). They attribute their ability to eat ‘intuitively’ to their upbringing, which centred around ‘healthy traditional foods ... and no processed junk ... so this comes like second nature to me’, before pivoting to say, ‘This might be harder for someone coming from a disordered eating past as your natural cues might be off-centre and you might find tracking [calories or macronutrients] better’. The discursive move they make here is not just to indicate that their experience is one that is personally grounded, but to specifically cite the reasons they believe that what works for them may not be what works for the OP. This degree of nuance significantly increases the authoritativeness of their opinion in the eyes of fellow redditors, earning it a spot as the most upvoted comment in the thread.

A second example illustrates how hedging is not only a useful discursive device in and of itself, but also acts to push users toward self-experimentation regimes which will allow them to make their own evidence. A user looking for help starting out in paleo receives a standard response, ‘There are no right answers for everyone, only right answers for you. It will take a lot of trial and error to figure it out. ... I would just experiment with foods and calories to see what works for you.’ Self-experimentation, or ‘n of 1’ experiments, forms a cornerstone of contemporary paleo theory. As such, comments which nudge redditors toward this kind of model are useful rhetorically, as they place the onus on the novice to take responsibility for their own advancement. Without wishing to impugn the intent of users in r/paleo, there are advantages to this approach: pushing self-experimentation as paramount means that users cannot indict a failed diet as indicative that the diet *itself* was flawed; instead, the conclusion is that they simply did not find what worked for them.

A final example comes from r/nootropics, where another 13 posts were coded for ‘individualism’. Importantly, while ‘your mileage may vary’ is the standard adage in r/nootropics, there still exist boundaries to how *much* one’s mileage might in fact vary. For example, common wisdom in r/nootropics is that L-theanine and caffeine ought to be one’s first port of call for a stack that combines wakefulness and attention, and one ought to try fixing their sleep even

before trying that. A user who asks ‘Is Piracetam an appropriate nootropic for beginners?’ gets the response, ‘I would look into just getting a better sleep cycle’ for their problem of morning lethargy. Another user responds, ‘L-theanine I think should probably be your first ... Keep in mind that paracetamol seems to have an effect on most people, but not all so YMMV’. Whilst generalised advice is necessarily subjugated by individual experience in this forum, there are still *certain* conventions as to what works, what does not, and what kinds of claims and advice are likely to receive upvotes from other users.

As a corollary of this *bounded individualisation*, it is unlikely that someone asking for help with a paleo diet would receive advice that simply tells them that paleo is not likely to be for them. They *may* be told that for their goals, they would be better off with a ketogenic diet in the short term, or that they ought to do a Whole30 first. Both these diets function on similar principles to paleo: relatively low carbohydrates, specifically avoiding processed sugars. They would never be told that the diet they needed actually involved a significant amount of processed food and grains. Your mileage may vary, but you should still stay on the road.

Halavais (2013) hypothesises that in the case of r/nootropics,

The relatively high number of indications that an opinion is based on personal experience is likely not just a difference in discourse style, but a reflection of the underlying expectations concerning generalisability. At least within these three groups [r/fitness, r/keto, and r/nootropics], the emphasis is heavily on application: there is an interest in getting it right because it has a direct effect on what redditors want to achieve in their own lives. Arriving at a generalised, repeatable result is important, but not essential. It is a space in which differentiation is desired, and so coming up with a solution that ‘works for me’ may be preferable to one that ‘works for everyone’.

Whilst I agree with the conclusion that hedging operates as an indicator of underlying expectations, Halavais’ analysis otherwise diverges from my own. He previously notes that r/fitness users do not tend to modulate their claims in the same way as users in the other two subreddits, but then homogenises the three groups. I would argue that the difference can be accounted for by two factors, both of which are significant to the way that authority accrues within self-improvement communities.

First, there is an acknowledged *dearth of evidence* in the nutrition and nootropics communities that is not the case in the fitness community. There is a broad consensus in r/fitness that particular regimes tend to work well at producing particular results. Comparatively, both r/paleo and r/nootropics have a culture that directly notes that the evidence in favour of a particular set of practices is inconclusive. That means that authority (roughly proxied by upvotes and supportive comments) is more likely to accrue to people in these communities who hedge their arguments. Users who attempt to provide a cohesive picture are far more likely to be believed when there is some recognition of the limits of their knowledge, particularly in a context where evidence very rarely conclusively points in a particular direction.

The second factor has to do with perceptions of heterogeneity of effects of nutritional or nootropic regimens upon users. Whilst again, r/fitness has a general agreement that for redditors wanting to gain strength or mass there are a set of programmes that tend to work well, there is less consensus in r/paleo and r/nootropics. For r/paleo, the founding principle of genetic makeup determining somatic responses to nutrition means that individuals' experiences will *necessarily* vary. For r/nootropics, there is an acknowledgement that the sheer complexity of neurochemistry means that one 'stack' will not do the same thing for every single person - Halavais himself notes that 'there is evidence that some people are genetically predisposed to have little noticeable effect from taking the drug modafinil', and 'whilst participants are happy to share their personal recipes of nootropic stacks, there is an understanding that these are personalised, and apply to the biology, desires, and tolerance of risk of each individual'.

The conclusion to draw here is that the epistemic culture of individual communities has a strong influence upon the discursive constructions users make and the attitudes other users hold towards those constructions. In r/paleo and r/nootropics the underdetermination of theory (of weight loss, muscle gain, illness alleviation, cognitive enhancement, and so on) by evidence is one factor, and the acknowledged heterogeneity of individual responses to diet and drugs another, in the construction of a culture in which hedging is a practice that is rewarded by other users. Moreover, hedging acts as a form of signal that one understands the norms of the group: by indicating that you are aware of the fundamental principles of heterogeneity, underdetermination, and genetic variation, you in turn signal to others in the community that you know what you're talking about - perhaps ironically by indicating your lack of total knowledge.

Conclusions

This chapter began by analysing how r/paleo and r/nootropics users assess the *sincerity* of potential sources of knowledge. Both communities have worldviews which are outside of what might be considered the ‘mainstream’: they distrust many ‘traditional’ sources of authoritative knowledge, including medical professionals and government bodies. In some instances, users will engage directly with the evidence provided by a source, disputing its veracity. However, a more common phenomenon is for the source’s sincerity to come into question. They are described as biased by their professional or educational background and/or prior commitments. Consequently, they are not reliable sources of knowledge on diet or health.

Both this chapter and chapter 7 are devoted to examining what, precisely, replaces these ‘traditional’ institutions of knowledge. The institutions, vernacular, and accoutrements of science are one such replacement. Users of both communities engage in discourses that are (only sometimes deliberately) attempting to emulate the ways in which science is conducted. Credentials are sometimes, but not often, examined as a heuristic of competency. More often, the ability of users to synthesise large amounts of information from multiple sources and present it in a digestible manner, or to produce coherent methodological critiques of scientific information, are the most reliable means by which they can be attributed expert status for the purposes of a conversation. If – as in the case of SH – they do this consistently within the subreddit over time, they may come to be recognised by other users in different threads, and treated with more respect than other, comparatively unknown, users. In addition, members of both subreddits engage in boundary work, attempting to police the lines between paleo and non-paleo, nootropic and standard drug, or ‘real’ and ‘imagined’ effects. The last of these will be explored more in chapter 7, where I deal with the problem of placebo effects and how users negotiate their relationship with them.

I also linked all of the above analysis with my concepts of *diminished subjectiveness* and *aspirational subjectivity*, where users will tend to give less credence to sources who do not seem to share the experience they themselves wish to have, or might be perceived to be significantly swayed by a limited body of potentially flawed evidence. Conversely, those sources that seem to display the skills and knowledge associated with science or other institutions that users themselves wish to possess are assessed positively. Likewise, users with a substantial body of experience – and who are able to demonstrate their accumulated knowledge dexterously and on demand – are more

likely to be attributed expert status through the perception that they lack the subjectiveness of less experienced users. This differs across r/paleo and r/nootropics. In the former, medical professionals are under substantially more scrutiny because of the negative perception users often have of them with regards to nutritional understanding. In r/nootropics, by comparison, there is a greater degree of valourisation of nuanced understanding and deployment of scientific vernaculars and skills. I attribute this to the divergent purposes, userbases, and discourses of the two communities, linking this in turn with the platform dialectic and how moderators and users enact their powers to make certain kinds of discourse hold greater or lesser value within the community.

Users like SH are one source of reliable knowledge within communities like r/paleo and r/nootropics. They are vested with trust in most threads in which they participate. These users often go out of their way to state the limits of their knowledge, a practice known as ‘hedging’. Because this is used by some of the more popular users in the community, it has come to be considered a marker in its own right that someone knows what they are talking about. The popularity of hedging also indicates that online self-improvement communities are interested in experiential knowledge, and the construction and passing on of knowledge through shared experience and self-experimentation. Chapter 7 will deal with these topics in detail, showing how users post and use advice based on personal experience, as well as how and why they engage in self-experimentation and self-tracking practices.

7. Evidence From the Self

The previous chapter concluded with a discussion of the extensive use of ‘hedging’, a discursive move that indicates that an individual is uncertain of the extent to which what they are saying is true: when, where, for whom, and under what circumstances its truth is delimited are unknown. Hedging is not only used to indicate one’s uncertainty, but through its use by and consequent association with well-admired individuals in the community, it becomes a discursive marker of authority in its own right. The fact that somebody is indicating that ‘your mileage may vary’ (Halavais, 2013) in and of itself becomes a reason to believe that they ‘know what they are talking about’ (Collins et al., 2010) and could consequently be worthy of delegating one’s authority to (an ‘expert’) for the purposes of making decisions on diet or cognitive enhancement. Moreover, this coheres with the concept of aspirational subjectivity: through displaying this kind of discursive virtue, users indicate to others that they have walked the path that others wish to walk, and also that they are aware of their own potential for bias and are taking mitigatory steps, consequently displaying diminished subjectiveness.

It is this last argument that becomes the point of departure for this third findings chapter. Much of my argument so far has concerned the intrinsically underdetermined nature of the field of self-improvement. This is true not just in the sense that all theory is underdetermined by evidence on some abstract level (Gillies, 1998) but crucially in the sense that many people in these communities *believe* that the externally available evidence is fundamentally insufficient to dictate their course of action. It is worth returning here to a comment made in an r/nootropics thread pointing out this is a ubiquitous condition for nootropics users: ‘The people looking to get high on a new drug aren’t particularly different than the self-taught pharmacokineticists roaming around here. Both *require some trust in their level of knowledge, basing their plans from the experiences of others, and dabbling with different drugs to find the preferred outcome* [emphasis added]’ (EDF). In light of this, users turn to other means of making, affirming, and reinforcing their choices with respect to diet and cognitive enhancement.

This chapter explores those means. The jumping-off point is the end of the hedging argument from the previous chapter. Users often go further than simply sharing their experiences or opinions and then noting the extent of their ignorance; rather, in response to questions from others they will often share their individual experiences, which are then received positively by

both the OP and others. There is an implicit understanding that this *is* only their experience, and that the plural of ‘anecdote’ is not ‘data’. However, users note that they find this kind of shared experience useful as a starting point to make decisions about their own bodies. They are also more likely to make a particular decision if, in different places and over time, multiple users come forward with similar anecdotal experiences. Consequently – and perhaps oddly for communities where the norms of science are so highly prized – the plural of anecdote in this context really *is* data. As I argued in Chapter 4, users are not looking for *objectivity* in their authoritative information sources: rather, they are looking for someone who is *less subjective* than them, or who has walked the path they themselves wish to walk.

Having established one of the ways in which individual users take the experiences of others as evidence that might inform their own ways of engaging in self-improvement, the next part of this chapter will look at the means by which those users justify their decision. In part this is drawn from the same kinds of accounts as those above: individuals narrating their choices, their motivations, and their outcomes. I also use the accounts of interviewees, who explained their motivations, desiderata, choices, and the outcomes of those choices to me at length. I articulate a similar argument to that made in the second findings chapter: that individuals tend to give the greatest credence to evidence that confirms or supports their pre-existing conceptions of the world. Insofar as they are willing to question or change their practices, this is often because their current practices have not provided them with the result they want (or adequate observable evidence of progress toward that result), or because the change they are making is minor enough such that it does not cause significant tension with their pre-existing beliefs. I also analyse the forms of explanatory regime individuals use to explain and justify their choices.

When individuals make decisions about what to put into their bodies that is not the end of the matter. Not only do they have to make further decisions about how much, when, and where to put it in, and consider the effects of all of the other environmental factors upon their consumption of the substance; they also have to monitor the extent to which it is making a difference, and differentiate that from ‘background noise’. There are some users of r/paleo and r/nootropics who are also immersed in the discourses and practices of the Quantified Self or ‘neurohacking’ movements (Lupton, 2016a, 2013; Swan, 2013; Wexler, 2017). For these users, self-tracking practices take the form of spreadsheets, apps, gadgets, and even blood tests (Neff and Nafus, 2016). However, even for those users who are not fully engaged in these discourses and practices, self-tracking and treating one’s body as an ‘ $n = 1$ ’ experiment (with or without an

explicit recognition of those terms and concepts) are still important in some sense. These ‘qualified self’ practices (Humphreys, 2018) may be as simple as keeping a sleep diary, looking in the mirror or at the scales, or thinking about how your mood is changing; regardless of how it is actualised, community members engage in reflexive practices of self-monitoring which inform their decisions with respect to cognitive or dietary interventions. In the third part of this chapter, I explore how users create evidence for themselves, either alone or in collaboration with others, which helps them to make decisions about what to put in their bodies.

The overarching argument in this chapter is that individuals in communities where knowledge is contested tend to ultimately make decisions about who and what to believe based upon expedience and the perceived likelihood of achieving the results they desire. Often, they look to the experiences of others whom they perceive to have similar circumstances to themselves as a guide for what might work, exhibiting my concept of *aspirational subjectivity*, attributing authority to those who have walked the path they themselves wish to walk. However, there is no higher authority on what works and what does not than the self: whether users decide to continue with or change their practices ultimately depends upon whether they perceive those practices to be beneficial to them in a way that outweighs the difficulties of adhering to them. Their beliefs and decisions in that arena, in turn, are strongly influenced by how they implement, monitor, and perceive their interventions into their health. Significant importance should be placed by the analyst upon the explanatory and justificatory regimes individuals employ with respect to their self-improvement practices. How they make sense of their experiences and explain them to themselves and others is a crucial component in their decision to continue on or change course. Finally, because reddit is a fundamentally social and performative space, the ways in which users ask questions and narrate their experiences will influence the responses that they elicit from others, which in turn alters how they perceive their own experiences and selves. Moreover, this interacts with the concept I previously developed, the *platform dialectic*, wherein users’ discourses are co-shaped with and by the deployment of features afforded to users and moderators for enacting their desires upon the structure of the community. The processes by which individuals receive, perceive, respond to, and implement feedback are, in short, deeply complex and variable. I will do my best to elucidate and unpack them in this chapter.

The plural of ‘anecdote’ is ‘data’

In the preceding chapter, I argued that ‘hedging’ is not only an important tool for delineating the limits of one’s knowledge but has also become a marker of authority in and of itself, performatively⁴⁵ creating the status of authority for those who use it properly. I argued that this likely became the case in part because scientists characteristically hedge their remarks, and users attempt to emulate their conception of the language of scientific discourse. In addition, the users who were most likely to hedge were those with significant experience or education in the areas under discussion, which would itself tend to entail an immersion within scientific forms-of-life and consequently a tacit understanding of the rhetorical norms of those communities (Collins, 2001).

Here, I want to move one step further to examine the means by which individual experience becomes codified as a legitimate source of authority upon which other users draw and base their own practices. Research into Quantified Self and self-tracking communities in the STS and digital sociology literatures tends to shine light primarily upon the processes by which individuals within self-improvement communities create data and iterate their practices (Lupton, 2016a; Neff and Nafus, 2016; Selke, 2016; Wexler, 2017). In contrast, I examine how individuals decide which practices to engage in to begin with, and how other users respond to these kinds of data produced by community members.

Experience as advice

As with other communities of practice (Akrich, 2010: 4.1), the sharing of experiences forms a significant chunk of comments and submissions in r/paleo and r/nootropics. In the sociology of health and illness there is significant work dealing with the ways in which sharing experiences on the internet can affect the health of patients (Ziebland and Wyke, 2012). Hearing others’ accounts can help them to confirm whether their diagnosis is correct (Armstrong and Powell, 2009), understand the likely effects and outcomes of different treatments (Broemer, 2004; Lowe et al., 2009; Sillence et al., 2007), change their attitude towards their illness and make them more confident (Caiata Zufferey and Schulz, 2009; Lowe et al., 2009), and provide pragmatic strategies for dealing with the problems that they are likely to encounter with their illness and its management (Sandaunet, 2008; van Uden-Kraan et al., 2008). Whilst nootropics users or paleo dieters may not be ‘patients’ in the sense of having been diagnosed with an illness, when they

⁴⁵ In the sense that Austin (1979) meant it, rather than the dramaturgical sense.

come to r/nootropics or r/paleo looking for advice they often take on a similar role to a patient. They seek information from those with similar experiences to their own, and they feel that they have a problem and they want to make an intervention in order to manage or ameliorate it. Moreover, they are in a position where medical professionals may not be able to give them the same kind of useful advice or experiences they can identify with, as another person who has been in a similar position to them. Consequently, we can understand the experiences of r/nootropics and r/paleo users through this kind of lens, and the rest of this section seeks to provide a fleshed-out account of how and why users share and read others' experiences in the two forums.

To illustrate the experience of a new user, I want for a moment to switch to a first person thought experiment. Imagine I am a neophyte in r/nootropics. I come from one of the major demographics: I am a college student who wants to improve his grades. I have some anxiety, and I find that when I consume caffeine, I get the jitters, and I want to find a solution that allows me to be both alert and calm. Upon my first visit to the forum, I find a Beginner's Guide linked prominently on the front page. After reading some preamble that tells me that nootropics aren't 'NZT-48 from the movie Limitless', outlines the potential risks of nootropics usage, and informs me of the 'lowest hanging fruit' means of improving cognition (namely: exercise, sleep, blue light), I come to a section titled 'How should I decide what's right for me?'. It reads:

First you should have in mind a target you want to improve. From there it's good to review the relevant research to see what nootropics are thought to improve that area and of those which ones have a history of safe use. Here's a condense list for common goals:

- L-theanine with caffeine for focus and attention
- Creatine for reasoning
- Bacopa Monnieri for memory
- Ashwagandha for anxiety mitigation

Given my desire for both focus and attention, I decide to look at L-theanine and caffeine, both of which are hyperlinked from this section. The text for L-theanine links to a large number of studies and systematic reviews informing me that it is 'extremely safe and has been shown to mitigate the negative aspects of caffeine', that 'the combination of L-theanine and caffeine may improve attention more than caffeine alone', and that this is 'one of the most reliable and safe nootropic stacks for improving focus'. At this point, I still have some questions. The FAQ tells me that there is 'no good research either way' to suggest whether my anxiety will get worse when

the L-theanine wears off or when I stop taking it. In the absence of evidence, I ask a question in the forum⁴⁶: ‘L-theanine seems to have a duration of 5-6 hours, so will I start to feel anxious afterwards and need to take another pill? Or, once the ‘high’ feeling is gone, will the benefits still linger?’. The responses come in, and the relevant ones look like this:

RO 17 points

I think you’re being very optimistic you’ll get high from L-theanine.

ETH 5 points

Yeah there won’t be a high as such but for people where anxiety has crippled behaviour a lot in the past the resulting levels of function can leave you on a high of sorts. I have very high tolerance for theanine now as well as a physiological anxiety source that it can’t mitigate but back when I was first using it I went from being a stress and overly careful driver to quick acting, effective and relaxed, and this coincided with me feeling like a natural during social interactions.

User RO 0 points

I’ve tried it on and off since 2003. It’s one of the last things I go to if I’m getting severely anxious. I don’t get what all the fuss is about. Glad it worked for you.

User TWL 4 points

I hardly even noticed the effects for a few days. I was getting these headaches through day 3, but I think was just expecting it to be this miracle drug. Day 4 I woke up, took some l-theanine and drank a cup of coffee. No brain fog, no jitters. Got tons of work done for school. Two weeks in and it’s been great. Once I stopped thinking about it like it’s a miracle drug, it started doing wonders.

User DAL 3 points

For me the effects last about 5 hours and I will re-dose if I feel like I need it.

I don’t notice any tolerance, but everyone is different. You can always cycle it if you feel it.

What these answers have in common is they do not attempt to answer the question with a generalisation or in the abstract. Without explicit invitation, each of the users states their own experience, and each of them (with the exception of RO’s response) is upvoted for it. They are simply anecdotes, and this is judged by the majority of voting users to be a useful contribution to the discussion. This is a common structure for the responses in an advice thread, as noted in the context of health forums (Ziebland and Wyke, 2012: 221). Let us take another example, this time from r/paleo. In this forum, there tend to be more explicit calls for others to share their

⁴⁶ N.B. This is based on a real thread from r/nootropics.

experiences, particularly with respect to overcoming obstacles in adhering to a new diet. However, the example in question is not a post of this kind. The user concerned is attempting to overcome 'brain fog', a phenomenon where individuals cutting carbohydrates from their diet can find it difficult to think well or concentrate. The post reads:

[Question] How can I get over brain fog? Trouble focusing, paying attention in class etc

User ASS 20 points – 25 comments

I've been doing paleo for the last week, not because I want to, but because I have IBS and SIBO, which means I have to eat a low FODMAP diet, and paleo basically eradicates my symptoms. However when I'm in class at university I struggle to stay awake and focus? I don't really have the motivation or will to study like I used to... In short, my brain feels flat, I only have the motivation to exercise, when I should be in the library, not the gym lol. Is it because I've cut carbs dramatically? and now my brain needs glucose? what's the go? is there a food i need to be eating that i'm not which is making my brain almost useless? PS: My diet is mainly: Breakfast: Bacon, eggs, half an avocado
Lunch: Banana, paleo bar Dinner: A lean meat + steamed veggies follow by natural organic probiotic yogurt (yogurt helps my IBS)

User ZAP 9 points

When I first started paleo about 3 months ago I had the same issue. Almost zero energy and lack of motivation for the first month. Like you, I also drastically recued my carb intake. What I have done is slightly increase my carbs. I'll have more vegetables or almonds as snacks throughout the day. I've also started drinking coffee. Straight black coffee in the morning to get me going. Make sure that you are getting enough sleep as well. Hope this helps a little.

User ASS 3 points

Yeah some more nuts and fruit wouldn't go astray I suppose, even as a snack!

User SNO 7 points

I had this issue at first, added in more sweet potatoes and fruit and now I'm good! I train 6 days a week, am pretty active otherwise and need energy for studying so I think uber low carb just doesn't work for me. I'm on about 150g now with 1 or 2 higher carb days when I'm feeling fatigued and hungry.

User SEVEN 6 points

Was just going to suggest this. Sweet potatoes are a great way to increase your healthy carbs. For me the brain fog always indicates my carb intake is too low.

User ASS 2 points

Sounds good, I'm not one for being low carb, I think even a 150g carb day is low for what I used to be eating! Trying to get those carbs is difficult though. Potatoes and more fruit would be good, I'll try this, thanks!

The excerpt above⁴⁷ shows how users not only state their own experiences as a reference point for others in need of help, but also directly infer from those experiences to potential solutions to OP's problem. In some instances, there is an implicit hedging or 'Your mileage may vary', as users simply state that they had a similar issue for potentially similar reasons, and then state what worked for them before saying that they 'hope it helps a little'. They do not imply that what they did *will* work; rather, it functions as a jumping-off point or prompt to action for the OP, who is left to make their own choices as to how to proceed.

These are two illustrative examples of a broader phenomenon: in response to the problems and quandaries of community members, users of reddit's self-improvement forums will very often post comments which outline their own experiences, show some commonalities between OP's problems and their own, give an account of the things they tried and what worked, and then wish OP well on their way. A number of questions remain, the answers to which will form the rest of this section. What function are these comments serving for those who post them? What do those seeking advice get out of them? And what makes for a successful comment of this kind?

Why post your experience?

At this point, it is worth reminding ourselves that reddit is inherently a performative space: that users are carving out identities for themselves, following norms of expression, and participating with the expectation of feedback from others which will then inform how they choose to participate in future (Cooley, 1902; Goffman, 1990). The answer to why somebody would make a certain kind of post is always going to be, in part, 'because it gets upvotes'. There is a circularity at this point, explored in Chapter 5, which makes it appear that we are celebrating a tautology: people post this kind of comment because they expect they will get upvotes. They have that expectation because others have previously posted similar comments that also received upvotes. In and of itself, this tautology can be resolved with reference to Barnesian bootstrapped

⁴⁷ The thread also contains some straight advice, with users interrogating OP's habits in various ways and then providing feedback on that basis. This lies outside the scope of my argument here, because it does not concern the means by which users relate to individualised evidence when looking for help.

induction: whilst the aggregate phenomenon appears to be tautological, when we examine individual cases we can see the differences from case to case, both in terms of the content of the comment and the response from other users (Barnes, 1983). Consequently, the overall phenomenon is formed by a multiplicity of individual cases with nuanced differences. A more interesting question remains: what is it that made this kind of post receive upvotes in the first instance?

This latter question must be answered with reference to the culture of both the individual communities and the set of self-improvement communities (and, more broadly, communities of practice) to which they belong. Thomasina Borkman (1976) uses the concept of ‘experiential knowledge’ (Borkman, 1976) to conceptualise the forms of knowledge produced by self-help groups: ‘truth based on personal experience with a phenomenon’, that ‘serves as a primary source of truth in self-help groups and which competes with professional knowledge – the foundation of expertise in most other human service organisations’. She sees this knowledge as defined by two criteria. First, the type of information on which it is based, ‘wisdom and know-how gained from personal participation in a phenomenon instead of isolated, unorganised bits of facts and feelings upon which a person has not reflected’ (ibid., p446). Second, ‘the certitude that what one experiences becomes indeed knowledge,’ that is, ‘a high degree of conviction that the insights learned from direct participation in a situation are truth, because the individual has faith in the validity and authority of the knowledge obtained by being a part of a phenomenon’ (ibid.). I do not wish here to enter into a discussion of whether experiential knowledge is indeed knowledge; indeed, I am happy to concede that in a communitarian framework it may well be considered ‘mere’ belief unless that belief is shared by more than one person. Instead, Borkman’s use of *reflection* as a criterion for experiential knowledge is important. We have already established that individuals post their experiences in part because of others’ responses. Those responses, I argue, are tempered by other users’ belief that (a) the experience of the advice-giver is analogous to the situation the advice-seeker is facing; and (b) that the advice-giver is *aware* of how and why their experience is analogous.

Let us unpack this. In the examples above, the comments featuring advice based on experience are not simply bits and pieces of anecdote. Rather, they tend to include (a) a reference to how their situation is/was similar to that of the advice-giver; (b) some detail of how their *somatic or mental experiences* are similar; and (c) an explanation of how a particular intervention changed the quality of those experiences. This fits nicely with the idea that experiential knowledge, in order to

be taken seriously, needs to be grounded in a reflexive approach to one's experiences and the extent to which they might be useful to another in a similar situation. It also coheres with two concepts I have developed throughout this thesis: aspirational subjectivity and diminished subjectiveness. By demonstrating the similarity between one's situation and that of an interlocutor, users can show that they have walked the path their counterpart wishes to walk. Further, by showing that they have some experiential understanding of similar phenomena, they can demonstrate that they are unlikely to be acting in a manner that is significantly biased by a limited or flawed set of evidence. Moreover, they have some of the qualities that Goldman, in his paper on trusting experts (Goldman, 2001), thinks of as useful desiderata in deciding whether to trust someone. *Dialectical superiority* is displayed in the form of immediately recognising and responding to potential challenges to their account: why is it similar to that of the advice-seeker? And why are the differences unimportant? Likewise, *agreement from other (putative) experts* is exemplified in these kinds of threads, where individuals can upvote or downvote to indicate whether they believe the comment to be appropriately helpful, as well as chiming in with their own comment that may support the advice-giver.

This kind of content appears not only in the comments of posts on reddit, but also in the lives of individuals seeking to make significant changes. When I asked interviewees how they ended up trying the paleo diet or nootropics, the answer often came with reference to the experiences of people close to them who had similar problems, tried a particular intervention, and reported positive results. For example, JS, who has been following some variant of paleo for 7 years, said that he was first turned on to the diet after he found that he was becoming 'painfully sick' whilst 'dating a girl who cooked a lot of pasta'. He continues, 'I think I may have actually even developed a gut level candida infection at one point because I started getting nearly instant hangovers from a single beer.' His salvation came from a recommendation from a friend, 'who found a nutritionist who suggested paleo as a solution to some of her problems, and then a personal trainer friend of mine said something about looking into paleo too.' Whilst JS's experience is bound up with the authority of nutritionists and personal trainers to speak on matters of diet and exercise, he crucially also had somebody in his social network find a solution to some of their issues in a dietary intervention, and this was instrumental in his decision to try this diet in particular. In a similar vein, SM is a woman in her 30s who has been eating some variation of paleo since early 2013. She describes her experience of coming to the diet in this passage, taken from an interview:

In 2010, I was under a super heavy workload and incredibly stressed with school (graduate) and I started having all sorts of crippling pain. I couldn't lift things or dress myself sometimes. I would T-rex with my arms or limp. My dad had fibromyalgia so the diagnosis sent me into a spiral of panic. I immediately started protecting my sleep and dropped out of graduate school for a few months. ... I knew I had to lose weight so I was still shopping options. Working out. Calorie Counting. Etc. Then I came across an article from a doctor who was diagnosed with aggressive MS and told she would never walk again. She started doing something similar to paleo (eating organ meats, cutting out processed foods, etc.) and now she's riding a bike. I started doing more research on paleo and at the end of 2012 found the Paleo reddit site where they were sharing success stories and recipes and pictures of food that looked so good. I think my body was craving the nutrients long before I recognized it was. In 2013 I started eating paleo.

Again, while there is some element of listening to an authoritative medical voice in SM's experience, she was influenced strongly by seeing somebody with a similar experience (multiple sclerosis, compared to her own fibromyalgia) find significant success (being able to ride a bike after being told she would never walk again) with a similar dietary intervention. SM goes on to describe the 'success stories' shared on r/paleo which further entrenched the idea that this might be a diet on which she would experience positive change. Later in my interview with SM, I asked whether she had considered the gendered dynamics of the paleo community, which has been noted for its 'masculine' emphasis on significant meat consumption. She replied,

I do, actually. I pay attention to what the women are doing. We have to eat less anyway, and our bodies use food for other things that may be impacted more harshly. Going too low carb for me or too high carb for me messes with my periods. Too low carb and they are SUPER painful. Like throw up from the pain. Go too high and the cramps and mood swings are stronger. But that might just be me.

Here, she demonstrates the importance of similarity of circumstance as an indicator that one ought to listen to another's experiences. At this point we could comfortably conclude that users who post their own experiences tend to receive upvotes – and have those experiences be accorded some degree of 'experiential authority', sometimes through aspirational subjectivity – because others who have experiences or circumstances which are in some way analogous find the comments relatable and helpful as suggestions for what might result in positive change in their own lives. Consequently, we understand what drives people to make this kind of comment in the first place, what those reading the comments are looking for, and what makes for a

successful comment of this type. Some possess the zeal of the newly converted, wishing to impart on to willing listeners the secrets that allowed them to change their lives for the better. Others seek validation and corroboration for their own subjective experiences, hoping that they resonate with the experiences of others. Some (perhaps many) are a combination of these two things. Relatability renders users more likely to listen – to delegate their epistemic authority – to others, especially if those others have walked the path they themselves wish to walk and reaped their desired benefits.

The conclusions above are based largely on the experiences of users of r/paleo. Instead of leaving this analytical thread with those conclusions in hand, I want to cement them further by illustrating how users of r/nootropics act similarly. LI, a woman in her 30s who came to r/nootropics as a result of damage caused by long-term prescribed use of benzodiazepines, said of the content of the forum, ‘I am most interested in people’s seemingly honest accounts about what has helped them,’ she continues, ‘While a lot of the content on reddit is extremely repetitive, righteous, and judgmental, some people seem genuinely smart and friendly, and are willing to share great tips.’ From here, we can begin to get a picture of a community whose members understand the experiences of others through a similar lens to the members of r/paleo. However, to make this conclusion might be premature; the way that other users talk about nootropics and the community suggests that there is a slightly different dominant attitude towards others’ anecdotal experiences.

The key difference between r/paleo and r/nootropics users with respect to their attitudes towards others’ experiences is in their caution. r/paleo users may take others’ experiences with a pinch of salt, treating them as the enthusiastic but potentially hyperbolic comments of those who are either newly converted or who have experienced significant changes to their lives. However, there is unlikely to be a significant risk attached to attempting to try what they have tried, if only for a few days. Dietary interventions can cause you to feel sick, tired, or even bored, but they are unlikely to result in serious long-term damage to your health unless pursued over a significant period of time. In contrast, nootropics are poorly understood. Their mechanisms of action may not be known; they may not have been tested in humans; if they have been tested in humans, they are unlikely to have been tested in a healthy population; even if they have been tested in a healthy population, it is unlikely it was for the same purpose as r/nootropics users have in mind; and even if none of the foregoing are the case, then it is *highly* unlikely that they have been tested in combination with all of the other supplements that make up the typical stack of a nootropics

user. Consequently, the members of r/nootropics find themselves in a double bind: they are almost infeasibly reliant upon the limited experiences of others to obtain information on the safety and efficacy of potentially nootropic substances, but also in a position where trusting solely in those experiences carries a significant risk of permanent injury if they turn out to be inapplicable to their own bodies. They face much the same problem as Ziebland and Wyke (2012) document in patient support forums: if the experiences others present are not typical, are inaccurate and biased, or are populated with the experiences of unusual people, the information may be distorted, perhaps leading to worse decisions if people are unaware (Winterbottom et al., 2008). However, r/nootropics users do not have the support or advice of qualified and certified medical professionals to guide them. This is likely one of the only places in which they can acquire advice, and so the question of how much credence they ought to give and to whom is perhaps even more acute in this forum than in other formally medicalised scenarios.

Justificatory regimes

This section deals directly with how users make sense of their experiences and decisions. In both interviews and the subreddits themselves, a major mode of discourse is *justification*. That is, individuals make choices to consume particular things in certain ways at certain times and in combination with particular other things, and many comments attempt to make sense of those choices for themselves and others. Analysis of justification in social sciences is led by Boltanski and Thévenot in their book *On Justification*, in which they note the ubiquity with which people engage in justificatory practices (Boltanski and Thevenot, 2006). Of relevance here is their concept of the ‘industrial’ world ‘in which technological objects and scientific methods have their place’ (ibid.: 203). This is the case not simply because users of r/paleo and r/nootropics aspire towards modes of discourse that are ‘scientific’, but also because the ‘industrial’ world involves justifications of worth that prioritise ‘productivity’ and ‘usefulness’. Many of those engaged in these communities, particularly r/nootropics, measure the success of their interventions not only by their capacity to ameliorate health-related issues, but also by their improved ability to do work, to study, to be productive in a variety of ways. This propensity towards seeing the human body as a tool to be optimised is one that ought to be borne in mind here and elsewhere when considering the place of these forums as ‘self-improvement’ communities.

The position I take in this section is that individuals tend to give greatest credence to arguments and evidence that supports their current worldview, and that insofar as they are willing to change

their beliefs or behaviours this is likely because their current practices have not delivered them the kinds of results they want. Individuals in these communities are broadly pragmatic about knowledge, and the quotes and analysis here should illustrate the way the question of ‘what is correct?’ is secondary to ‘what works?’. This corroborates the importance of the concept of aspirational subjectivity, indicating that what has worked for *others* is important to users in determining what might work for them.

Methodologically, note here that these discussions (particularly interviews) must be treated as *resource* rather than as *topic* (Mulkey and Gilbert, 1982). When asked questions like ‘why did you do this thing in this way?’ we tend to give answers that rationalise our actions and present us in a favourable light, or at least in the way that we would like to be seen by our interlocuter and ourselves. Likewise, when subreddit users discuss their reasons for acting in particular ways – especially in a context which lionises rationality and ‘scientific’ modes of discourse – there is a tendency to elide or gloss over (consciously or unconsciously) factors like force of habit or inertia, or even the fact that they may not know why we made a choice. Moreover, redditors – even when speaking in confessional or personal modes – are speaking to an audience and mindful of their voting tendencies. However, this does not mean that users’ conceptions of their reasons for doing things, or their understanding of their own lives, should be discounted entirely. To do so would be to privilege the position of the analyst and risk substituting my own interpretation of the world for theirs. Consequently, this section attempts to navigate the thin and fuzzy line that both adequately problematises the positions and justifications of individuals whilst also taking seriously their accounts of their lives.

Pragmatism: What’s ‘True’ is what Works

The core contention of the first two sub-sections is that for paleo dieters and nootropics users alike, concerns around what is ‘true’ are less important than concerns around what is *effective*. For dieters, whether their beliefs about the world are accurate is secondary to whether they are on their way to achieving their goals. Likewise for nootropics users, personal knowledge of what works for an individual is far more important than the question of whether the underlying understanding of how a substance works is correct. For nootropics users in particular, there is a trade-off of risk against potential benefit, and the ‘truth’ of whether a drug is effective is often mediated through the perceived answer to that trade-off.

In interviews with r/paleo users, pragmatic concerns usually precede questions of whether the diet is ‘correct’. For example, AK explains that the main reasons that she finds paleo helpful is because she has an ‘addictive personality’ and needs ‘black and white ways of doing things’, which paleo provides by ruling certain food types ‘in’ or ‘out’. Paleo, then, ‘makes sense’ because it works for her: ‘it narrows my choices so I have a manageable choice to make’. She cites the same kinds of pragmatic concerns when talking about the non-viability of other kinds of diet:

Vegan has always been out for me. I was a vegetarian for about 4 and a half years. I did it correctly but I was not healthy. Women has lower iron than men and mine was habitually low. That on top of not being able to get enough B vitamins, I need beef in my life.

...

Keto didn’t seem right for me because it wasn’t about making healthy food choices, it was about making your numbers fit. Any diet or eating lifestyle that is solely about numbers means there’s always a way to game the system. Trying to stick to 1200 calories? Eat 1200 calories of Oreos. Trying to stay below 20 grams of carbs? 4 cups a cheese, here I come.

She continues that the ‘spirit’ of paleo ‘is what made it look extra good for me. Focus on vegetables, add some healthy proteins, top off with a little healthy oil, fruits, and nuts. That makes sense to me because it’s looking at the whole diet and take nutrition into what’s important’. What *makes sense* is what *works*. Interestingly, she then appears to buy in, to an extent, to the rhetoric that underpins paleo, retrospectively making sense of her decision by reference to its correctness as a way of viewing our dietary needs:

I know genetics has a certain amount of play in how your body handles food. This is easily seen with the ability to tolerate milk. More of the crap food has only come around as an option within the last 75ish years ... The human body hasn’t had time to catch up in an evolutionary sense to fast food. It hasn’t even had a chance to catch up to the fact that, as a species, we’ve become much more sedentary. Evolution, as a general rule, isn’t fast. Taking a step or two back in our evolutionary diet makes sense.

Consequently, for AK the fact that paleo worked for her as a person then allowed her to find justification for believing its theoretical stance. A similar logic can be found in talking to AB:

I struggled with my weight since I graduated High School and stopped playing sports. I knew I needed change and I tried everything else. Conventional wisdom failed me time after time. Low-fat foods? Didn't work for me. Vegetarian? Didn't work. Low Carb/Atkins? No way. I was almost like I was out of options when I stumbled onto Paleo totally by accident. It just clicked. It was like the opposite of all of that stuff that didn't work.

Paleo 'just clicked', and later in the same email he says, 'I found what works and I'm rolling with it.' He goes on,

Changing my diet to 'how people are supposed to eat' motivated me to change a lot about how people are supposed to do a lot of things. I value sleep – I used to think sleep was for the weak and that if you wanted to be productive you fought through being tired. I exercise – not just bodybuilding isolation movements but moving my entire body the way it was meant to move. I spend more time and value the time I spend outdoors – the way people were meant to spend their time.

Again, his stance on other aspects of his life and the correctness of the paleo outlook as a description of how humans ought to live came *after* he derived positive change from the diet, rather than before. Pragmatism precedes conventional understandings of the truth of a diet's precepts in his case, too.

To complicate this picture, we can bring in JS, who is perhaps more reflective about the origins of the benefits he has derived from his diet.

I think there is probably something to [the paleo worldview], but I think it's entirely possible that some of the success associated with paleo is just a happy side effect of getting away from processed crap that is made from crops soaked in things that might even be mildly poisonous.

It would be premature to conclude, then, that people who benefit from a particular lifestyle choice are necessarily likely to believe the underlying claims that lifestyle makes to being 'true' or 'correct'. However, JS does give further corroboration to the pragmatist framework of belief held by many r/paleo users:

I am very open to other explanations, and in many areas of life I am kinda obsessed with understanding the how and why ... but food is more of a means to an end for me. So while I am interested, just because I'd kinda like to know everything, I have other things that I am more likely to spend time on as long as what I am doing seems to be working.

There are similarly pragmatic regimes within r/nootropics interviewees. AA, for example, directly argues that self-experimentation produces the most important form of knowledge:

The lived reality of human existence is not a reproducible experiment with large N. It is exactly MY experience. In that sense, individual experimentation is actually the MOST real sort of knowledge we could actually gather.

Likewise, AZ puts across a case that is similarly pragmatic, appealing to the popularity of substances as an indicator of their value:

I am a believer in 'existence justifies the logic', there probably is a better way of saying this. But it means that if something exists, therefore it must be logical for it to exist. So, popularity is a big indicator from my perspective.

When considering the beliefs of nootropics users, however, 'truth' does not tend to be a particularly significant factor. In contrast to dieters, who feel they must justify their particularly way of eating, they are not forced to choose between competing accounts of the relationship between nutrition and human health. There is no perceived incompatibility between consuming one nootropic and consuming another, and trade-offs between 'stacks' may exist but discussions on this topic are not politicised in the same way as inter-diet discourses.

As such, justificatory discussions in r/nootropics often hinge around *how effective* or *how risky* a particular substance is, and how this can be cashed out in concrete terms. The next sub-section deals with these concerns.

Balancing risk and reward

How, then, do individuals justify the way they choose to balance the potential risk of taking a relatively unknown substance against the benefits they may derive from it?

AZ, a man in his mid-twenties who had been using nootropics for around three months, said on this topic:

Since information is scarce on how combinations of substances would affect your biochemistry as a whole, it really comes down to risk tolerance, or perhaps ignorance, in a lot of cases.

He draws attention here to the common practice of ‘stacking’: taking more than one substance at a time, with the hope that the different supplements in the stack will not disrupt one another’s functioning and may even produce effects that are greater than the sum of their parts. A common example for the nootropic neophyte would be caffeine and L-theanine, a combination known by community members for producing energy (from caffeine) and calm (from L-theanine), with the latter mitigating some of the anxiety and jitteriness that can commonly result from the former.

The effects of individual drugs may be known, but their effects when combined (in different doses and in different people) are unlikely to be well-tested. Consequently, as AZ says, what people are willing to try is often a function of their tolerance for risk. The hidden variable in this equation, though, is how desperately the user wants the benefits they hope to derive from the drugs. For example, EH, a Canadian doctor in his mid-forties, said that his anxiety drove him to becoming,

Desperate for relief beyond what medications (prescribed) can offer. I can’t tolerate most antidepressants, for example, due to side effects. Have tried probably over a dozen. Also, do not want some prescription options that are addictive, e.g. lorazepam for anxiety. Started looking at options from natural health food stores that had at least some evidence for safety and efficacy.

EH saw nootropics as a ‘softer’ alternative to prescription drugs, with which he had both tolerance and addiction concerns. His appetite for risk was low, but he was prepared to try things with ‘some’ evidence behind them as a result of his mental health condition.

DJ is another middle-aged Canadian male who works as a pastor in a Baptist church. He began using nootropics to counteract the ‘high stress demands’ of his job, which he says cause many in his profession to “‘crash and burn’” with emotional breakdown and burnout’. We conversed explicitly on the topic of risk and self-experimentation, where he divided r/nootropics into two camps:

1. Closer to the recreational mindset of ‘I will try anything’. Very risk tolerant. Possibly influenced more by placebo effects and anecdotal reports.
2. Closer to the academic mindset, and aware that reckless experimenting can do more harm than good. More risk averse, and looking for a few things with proven gains.

He notes that he is ‘in the more risk averse part of the community’ and ‘had my season of enjoying stimulants (over 30 years ago) so I am not as interested in trying some new thing that makes you feel like superman for a short time, as I am in things that let me function long term at a high level without highs and lows.’

For many users of r/nootropics, this distinction would feel familiar and robust. There are many individuals who are ‘more recreational in their approach but want a way to feel good about chasing the dragon’, such as the user who wrote a post asking about the ‘high’ he would experience from taking L-theanine, the active ingredient in green tea. These users are typified by anecdotal reports after short use of a given drug, often declaring its transformative effects. This demographic was large and loud enough that they caused significant drama within the community when the moderators created a sister subreddit, r/afinil, to capture all of this kind of post. They argued that the posts were cluttering up the subreddit and contributed little to nothing to the community or to the epistemic project they wanted to pursue.

In contrast, DJ and other users (typically older or more experienced) are significantly more risk averse, with some going so far as to seek lab assays of their regular nootropics in case they contain unsafe quantities of heavy metals. These users tend to look down upon those in the risk-tolerant camp as having, in DJ’s words, ‘a dangerous habit of trying stuff with no real regard for negative consequences.’ Their justification for using nootropics tends to be more for mitigating age-related concerns, anxiety, or other chronic issues; comparatively, the ‘risk tolerant’ users are often looking for an ‘edge’ in their academic study or work, and may be willing to find this edge

either through untested or poorly tested substances, or through substances with known (and noticeable) strong short-term effects. Elsewhere in this chapter I deal with the importance of ‘feeling it’ for these users.

This perception that the ‘risk-averse’ users have of ‘risk-tolerant’ users, though, may not be entirely accurate. Interviewee KB is a male temp worker in his mid-twenties, and would likely fall under what DJ would think of as a ‘recreational’ mindset, given that he found nootropics ‘through the r/drugs subreddit’ and was ‘looking for something mild that would help with anxiety and depression, but could also be recreational.’ However, his use cannot be siloed into a pure ‘recreational’ (and implicitly ‘reckless’) mould. He says,

In general, nootropics have been very helpful in keeping my depression and anxiety under control in ways that prescribed medication failed to do. It’s also been a good way to allow me to limit my Adderall intake without completely losing my focus and motivation. In theory, I’m hoping for long-term benefits from my stack.

He is simultaneously using nootropics for focus and motivation (often the desired benefits derived by ‘risk-tolerant’ users of modafinil or Adderall) and to mitigate the effects of mental health conditions. Indeed, these are the same professed reasons for consumption we saw in the more risk-averse users.

OB, a male undergraduate student from the US in his early twenties, would also be classified by some as ‘risk-tolerant’. He uses modafinil, which he says ‘allows me to study for hours on end’. However, his justification comes across as significantly more reasonable than risk-averse users might think:

To study you need patience, focus, and hard work. I have patience and modafinil gives the focus and I do have to bring my own hard work. Without it I get distracted and have a hard time focussing for long sessions. ... Modafinil is so great in its effect that I take it knowing that it may have long-term negatives on my life later.

Far from being unduly influenced by ‘placebo effects and anecdotal reports’, it appears OB has ruminated upon his use of a prescription substance and decided that the risk of long-term harm is worth the significant benefits he feels he currently derives from it.

Moreover, OB is another example of a user who simultaneously engages in behaviours that straddle both of DJ's r/nootropics camps. He also uses several other substances which follow an idea of 'gentle improvement' and avoids some 'cool nootropics like Semax and Selank or Noopept' which he worries that his body may not tolerate. He also uses Lion's Mane, which 'just makes me feel a lot better'; and fish oil, which 'makes me noticeably smarter'; and ZMA, which 'helps with sleep'.

The divide between risk-tolerant and risk-averse users collapses amongst those I have interviewed, though there are certainly users of r/nootropics who fall squarely in one camp or the other. The more interesting observation is how these descriptions of others' motivations are asymmetric with the user's own. Whilst they (as risk-averse users) are rationally driven by a desire to improve their lives, those who use nootropics with more pronounced effects or higher risk profiles are 'chasing the dragon' or 'irresponsible', with no real regard for the consequences of their actions. Moreover, risk-averse users like DJ will freely admit they were more risk-tolerant in the past, but will not put themselves in the shoes of individuals who are in that position now in order to understand why they do what they do.

Ameliorating past harms

A common thread between r/paleo and r/nootropics users' justifications for their consumption practices is that of ameliorating harm that has been done to their bodies and/or their minds. In these instances, the harm appears to offer an *a priori* justification for trying different solutions (based in food choices or drugs), because the damage has already been done. Users then find justification for continuing with their choices insofar as they make progress on ameliorating the particular issue with which they began.

Several examples of this kind of justification follow:

I use nootropics out of a fear I overused prescribed ADHD medications and taxed my brain of some of its resources. It's very similar to another reddit user who said he possibly permanently altered his dopamine flow after amphetamine abuse. Nootropics that I use are mainly over the long term for brain health and that I also hope are restorative. (TH)

I use piracetam daily to treat my juvenile myoclonic epilepsy. I used it before I knew I had JME and noticed even then that it made me much less twitchy. (PA)

It may help with buffering against neurodegeneration. I have two APOE4 copies, so I know I need to do all I can to prevent neural deterioration. None of these nootropics have been shown to prevent this long term (because they haven't been tested longitudinally) but they do often seem to help older patients with their decline. It can't hurt to try some of these for longer periods of time. (KJ)

In all of these instances, the justification for experimenting with diet and/or nootropics is provided by either a past harm or a current problem. Progress in alleviating those problems would constitute evidence for the correctness of the user's choices; likewise, a failure to improve would indicate that the diet or supplementation regime is wrong *for them* (though it may well be right for somebody else), and consequently credibility or truth are constructed as defined by whether a *specific* problem that they have previously identified can be rectified. Other effects are generally secondary and may be considered to constitute further evidence for the correctness of their decision. Finally, it is worth noting that in many of these instances there is little or no mention of the risk of their choice. Rather, the script is flipped: continuing on as they were is considered a risk or a harm, and making any kind of active choice is, to them, likely to confer some benefit.

This sub-section ends with some drawing together of the ways in which pragmatism becomes evident in the talk of interviewees and users of r/paleo and r/nootropics. There is some divergence in details, but readers will note the similarities in the following summary: paleo users justify their choices by the health benefits the diet has brought them in comparison to previous dietary choices; while nootropics users justify themselves by reference to a risk/benefit calculus with respect to their health. Both sets of users will also justify their decisions with reference to ameliorating past harms they have experienced, either from their own actions or the actions of others. In those instances, the burden of risk is flipped: to *not* act would be riskier than to take the potential problems their diet or supplement regime may present. In all instances, pragmatic justifications for their intake are at the core of why they do what they do.

Placebo effects

A major concern present in r/nootropics is the placebo effect, which haunts discussions of the positive effects of supplements. Users worry that the effects they feel from drugs may be a result of placebo rather than ‘real’ effects (usually thought of as interventions in biochemical mechanisms mediated by active ingredients in the drug). Some make derogatory remarks about new users, whom they see as naïve and unduly influenced by placebo effects. Sometimes placebo effects are attributed to being sold ‘fake’ pills from unreliable vendors, while in other instances users have what are considered by others to be hyperbolic reactions to substances, which they then argue are in fact placebo effects. It may appear that there is no ready parallel to placebo in r/paleo, but some interview discussions delved into the question of how much of the benefits a user derives can ‘really’ be attributed to paleo itself (insofar as paleo’s guidelines can be strictly defined), and how many are a result either of miscellaneous diet changes (‘cutting out processed crap’) or simply the fact that *a* change is being actively chosen and made. In this sub-section, I explore how users discuss placebo effects, including how they attempt to justify their claims that the effects they experience *could not* be placebo.

Some users, particularly those who are more rigorous about testing or interrogating the safety and efficacy of supplements, are deeply concerned about placebo. For example, DJ says, ‘There is way too much homeopathic/placebo/junk that needs to be refuted as ineffective or dangerous.’

Interviewee SY, who was relatively new to the community, notes ‘self-experimentation with nootropics is difficult, just because the effects seem to be so easily explained by placebo’. When we began speaking, he was initially enthusiastic about the drugs he had taken:

I find that I gain a great deal of motivation, which I normally struggle with. ... I have noticed that the addition of Noopept, in particular, has allowed me to speak more freely, and without stumbling on my words. It also appears that I become more able to remain in a mindful state, even under stress, allowing me to evaluate myself and the situation at hand in a much greater depth.

I enquired as to how he knew these effects were not attributable to the placebo effect, which caused some consternation:

I’ve done a more than reasonable amount of researching MoA, proper dosing, side effects, etc. but did get overly excited about the possibility of actually trying nootropics, and didn’t bother to source

properly. Now, I DID notice positive changes, but as you said, they are really intangible, and very easily could have been placebo. After exploring some more (falling asleep 2 hours after dosing 600mg of Adrafinil seems a little fishy), my sources are poorly reputed, so I'm fairly certain that everything I have been taking (with the notable exception of Citicholine, the brand Solgar checks out well), has been nothing but maltodextrin pills. As disappointing as that was, I learned a valuable lesson in the (potential) power of placebo. My verbal fluency truly went from regularly stuttering and stumbling on words, to being able to use my whole vocabulary with relative ease, quite possibly by merely convincing myself that the pills were real. Interestingly, now that it has been a couple of days, my verbal fluency has not diminished.

He had initially placed implicit trust in his sources, and the benefits he received from the drugs corroborated the idea that they were 'real'. Once he noticed that the effects were not entirely as he expected, though, the identity of the drugs changed to him. As his previous conception of their purity or identity collapsed under the weight of anomalous findings in his self-experimentation, he revised his conception of whether they were as advertised, and retrospectively attributed the positive effects to placebo. Curiously, though, the placebo effect appears durable for him: he notes that his perceived improvement in verbal fluency did not disappear when he revised his opinion of the drugs he had been taking.

Notably, not all users are *concerned* when confronted with the possibility that the effects they have experienced might not be a direct result of the power of their dietary choices and/or supplementation. For example, interviewee OB derived a number of quite vague but positive effects from fish oil, ZMA, and Lion's Mane. When I questioned him on whether he felt these were 'real' effects of the drugs, he initially defended the idea that they must be, before eventually relenting in the same email.

I know that it is more likely that it is not a placebo effect than that it is because, for example, I have taken Lion's Mane over several periods of time and they seem to have an effect on me. ... But you're right, I do not know of a way to subjectively differentiate between placebo and effect without blatant effects.

This does not appear to worry OB. Regardless of whether the effects he is experiencing are placebo, he *is experiencing* them, and consequently the benefits he derives from the drugs are real enough to justify continuing to believe in and consume them. Once again, this is a pragmatist stance focussed on what 'works'.

OB argues above that because he has taken Lion's Mane over 'several periods of time' and had an effect, that the effects are unlikely to be placebo. This exemplifies a tendency amongst r/nootropics users to attempt to demonstrate that the effects they have experienced could not be placebo. This may be used to show to themselves that their particular drug is pure. Alternatively, it may be to demonstrate some kind of intellectual strength: experiencing placebo effects without recognising them as placebo seems to be associated with intellectual weakness, and so demonstrating that the effects could not be placebo is a way of saving face.

In a continuation of the theme of balancing perceived risks and rewards, interviewee AA gives a response that nicely encapsulates the attitude that a large number of users seem to have:

I think a lot of the controversy stems from where people are coming from before they even arrive at the research. If you're a doctor who needs to be prescribing gold standard treatments, you're going to be looking for Cochrane reviews and that kind of level of evidence for which no nootropic in history or in any likely near future would qualify. If you have \$20-30 spare outlay that you can spend on yourself to take a chance on something that might be placebo but seems pretty low risk otherwise and could benefit the other things you're doing for yourself synergistically... wouldn't you?

Users are experimenting on themselves only, and are in many instances not spending a large amount of money. They are not doctors prescribing to patients, and so do not require large-scale meta-analyses. Instead, they may be spending \$20-30 on a supplement that may only produce a placebo effect, but is otherwise relatively low risk and could bring a potential benefit that might not be garnered elsewhere. In essence, users are happy to take the risk that the drugs they receive, or what they will experience, is placebo, because the perceived risks are minimal.

How are placebo worries placated?

A key problem associated with nootropics, then, is the subtlety of many of their effects. Similar is true of the paleo diet, where positive effects can be put down to changes outwith paleo itself, and negative effects of going 'back' to the Standard American Diet (which dieters often consider demonstrative of paleo's healthful effects upon their gut microbiome altering their tolerance for 'processed crap') may be put down to nocebo. We have seen above that these problems can be

overcome through rationalising the cost/benefit trade-off, but users also mitigate these concerns by other means. These come through aggregating the similar experiences of other users as a means of demonstrating that the effects are both *consistent* and experienced *independently* of users' expectations, or else talking about the *strength* of effect they experienced. This latter defence, though, comes with the problem that in attempting to justify themselves to others with reference to how much of an effect a nootropic had, they open themselves up to the critique that they do not know what they are talking about.

In spite of the reputedly subtle effects of nootropics, many users *want* to believe that the effects they are experiencing are 'real' rather than attributable to users' psychological states. In a thread launching a chewing gum containing L-theanine and caffeine, a sceptical user states, 'I'm curious but I honestly have my doubts that it works. It's not me being negative, it's really cool that you've done this! It's just like I don't know if I'll take it it'll actually work or it is just a placebo.' The owner of the brand responds that 'It's totally fair to have your doubts! Sometimes, the effects on a lot of these nootropics are so subtle that I have my doubts too.' However, the aggregated experiences of previous users are provided as evidence for its efficacy, 'I will say that all the people who have tried (around 50+ of friends and strangers) feel it to some degree of another, and they all report that it's that alert/focused energy'. The similarity of felt phenomena, combined with the number and range of familiarity of testers, then, is meant to act as evidence that the gum is not placebo.

Another example comes from a thread about the herb Gotu Kola, which the OP says they have used for anxiety. A sceptical user responds, and then is criticised for denying the experiences of users in the thread:

EVX -1 points

Its not supposed to work for a month so you're imagining it. Ie placebo.

FIN 2 points

A substance can have immediate effects AND long-term beneficial effects that take time to realize.

EVX 0 points

Of course. The supposed substance could be mixed with other substance that's causing the immediate effect.

FEL (OP) 1 point

Quite a bold assumption. What's your basis for this?

The effects are not placebo for anyone reading this thread. I have quite a lot of experience taking just about every herbal sedative one can think of. The effects *were quite strong and confirmed by a friend who is not sensitive to most herbal sedatives* [emphasis added].

EVX 1 point

Read up in it.

Here the OP is criticised for ‘imagining’ the effects, with two responses. The first response says that the effects can be immediate and also long-term, and EVX responds concerning the *identity* of the substance, arguing that any immediate effect must be coming from another substance secretly mixed in, since Gotu Kola ‘cannot’ work in under a month. This is irresolvable with reference to the evidence. The second response is from OP, who says that the effects *cannot* be placebo, because they themselves are extremely experienced in herbal sedatives and therefore know the difference between placebo and ‘real’ effects. Moreover, the effects were *strong* (and therefore not imagined), and they were corroborated by a friend for whom herbal sedatives are normally ineffective (and therefore for whom presumably this would not work unless it were ‘the real deal’).

The ubiquity of placebo – and the arguments mitigating arguments for its presence – is primarily of concern in r/nootropics, where there are significant financial gains to be made from substances which become popular as a result of user testimony. Moreover, the perennial concern that users experimenting with nootropics are ‘reckless’ or ‘chasing the dragon’ means that many users take it upon themselves to critique users who seem to be overclaiming about the effects they experience. These ‘naïve’ users however are often able to defend themselves with reference to the strength of effect they experienced, or else to the shared similar experiences of others or the wide range of experiences they have had previously. It is worth noting how this links in with the concepts of diminished subjectiveness and aspirational subjectivity: for the former, the corroboration of other users, as well as the strength of effect, are wielded as indications that their experiences are not simply the result of biased cognition; with the latter, their experiences and the things they have achieved as a result become testimonials for other potential users to draw upon.

The curious paradox here is that *subtlety* is often used as the hallmark of ‘real’ nootropics. Users argue that nootropics should be subtle, in contrast with ‘drugs’ which often produce effects which cannot be ignored. Users, then, find themselves in a bind: they can either claim that an effect was so strong that it could not have been placebo (and be subjected to the accusation they

are using it as a recreational drug, or not *really* using it as a nootropic), or else only claim effects that may well be attributable to the placebo effect. The very strength of the claims made by some users about the effects they experience from substances ranging from magnesium to L-theanine is often used as an indication they do not know what they are talking about and ought not to be listened to. As such, in doubling down on their assertion that the effects they experienced were ‘real’, many users find themselves losing credibility in onlooking members of the community.

Community problems with placebo

As stated above, r/nootropics has a far greater issue with placebo effects than r/paleo. This is not just because of the concerns regarding reckless behaviour and financial gain, but also because of an abiding anxiety that understated placebo effects are likely corrupting the knowledge being produced in the subreddit. In a thread with 165 comments, user DISC writes ‘I believe an important amount of posters in this subreddit GREATLY underestimate the placebo effect’. They continue,

DISC 308 points

People tend to think they are immune to placebo, but that’s simply not the case. Nobody is. Even the smartest person in the world can get fed an illusion. The placebo effect is very, **VERY** [emphasis original] powerful and should definitely not be underestimated.

The thread that follows contains incisive explorations of what, precisely, the placebo effect is. As with most meta-discussion threads, there are also back-and-forth exchanges about patterns of posting, with some users accusing others of ‘waiting to ambush [people who post happy l-theanine stories], yelling placebo placebo!’. Crucially though, there is an epistemic component to the conversation. As one user points out, ‘if you’re not taking steps to control for the placebo effect, your report is not very useful for anyone else.’ This refers to the key function that user reports are supposed to serve in the eyes of the r/nootropics community: providing a basis for other users who might wish to take a nootropic to do so knowing that it has helped somebody else. This is, in effect, a structure designed to facilitate aspirational subjectivity. If they are taking a drug with effects that may be entirely endogenous but presenting them as though they are caused by the drug itself, then they are – in the view of the community – pushing bad knowledge and corroding the integrity of the community as a knowledge base. Harking back to my analysis of ‘hedging’ and epistemic modesty as a virtue, another user notes, ‘the underlying issue I think OP raises is the lack of scepticism and uncertainty in these self-reports (both positive and

negative).’ The concern the community has, then, is that users are not self-aware enough about the claims they make: they do not sufficiently state their degrees of uncertainty and bias.

This thread further corroborates the argument I make earlier in this chapter: that what *matters* to many users is what *works*. While the OP and some in the thread are concerned about the overall epistemic integrity of the community, other users point out that for many people it does not matter whether effects are placebo, so long as they are present. User MAR points out, ‘it is not that posters underestimate the placebo effect. It is that the placebo effect doesn’t really matter since it is folded into the total effect of treatment. Further, only the outcome matters. And more importantly, it is the mass outcome – the total experience of a group of people taking a treatment – that matters.’ The argument MAR makes, then, is that the number of positive and negative experiences should be aggregated to give an idea of how a nootropic should be considered. The plural of anecdote, in other words, is data.

It is worth contrasting the concerns expressed above with r/paleo, where the issue is brought up far less frequently. The best explanation I can come up with for this – other than the fact that r/nootropics is far more concerned with scientific culture and its accoutrements – is that r/paleo is much more focussed on *support* than r/nootropics. In r/nootropics, knowledge-building is the central project. The moderators have taken decisions that upset significant proportions of the subreddit (such as filtering out modafinil posts) in order to maintain the integrity of the community as a knowledge-building endeavour. If users are posting experience reports about nootropics that seem to overstate their effects, then other users take it upon themselves to point out that these effects may be placebo. They do so not only to make the point that they are smart (though this is part of it) but because these posts threaten to undermine the goal of the subreddit as a whole: to act as a centralised repository for accurate and helpful information on nootropics. Anecdotes and experience reports form part of this repository, but only insofar as they acknowledge the limits of the knowledge that they produce.

r/paleo, while nominally focussed on the diet itself, also acts as a support community for those adhering to it. Users who post their experiences and anxieties – no matter whether they are perceived as hyperbolic – are usually greeted by others who take their concerns seriously. The exceptions are posts that seem genuinely ridiculous or make the subreddit look bad (for example the user who asked whether any others had found that eating a paleo diet made them recall their past lives as hunter gatherers). But in general, users who say that their lives have improved since

eating paleo are likely to find support and plaudits. Very few users are looking to publicly poke holes in their accounts – and those who do are not always rewarded. In private, some interviewees express reservations about whether paleo itself is responsible for all the effects users experience, but these concerns are not salient enough to be aired as anxieties within the subreddit itself.

Accounting for difference

In their work on ‘accounting for error’ in biochemists’ talk, Gilbert and Mulkay (2009; 1982) discuss how scientists organise their accounts of ‘action and belief in ways, appropriate to the particular interpretative context, which explain, justify and validate the version of his scientific position furnished in a specific passage of talk or in a particular unit of discourse’ (Gilbert and Mulkay, 2009: 64). They go on to show the ‘pronounced tendency’ of scientists ‘to organise such accounts around an asymmetrical counterposition of empiricist and contingent version of actions and belief’ (ibid.: 82). That is, their own (scientifically correct) views are accounted for by the evidence; others’ (scientifically incorrect) beliefs are likely the result of social factors, such as their ‘prejudice, pig-headedness, strong personality, subjective bias, emotional involvement, naivety, [or] sheer stupidity’ (ibid.: 79). They conclude that it would be premature to say ‘that scientists’ accounts of error will always be marked by a more definite contrastive pattern than those of laymen or that laymen will never have access to some linguistic equivalent to the empiricist repertoire. Our evidence is too fragmentary at present to decide on these questions’ (ibid.: 89). Whilst I cannot provide an answer that generalises across all laypeople, the data I gathered and analysed for this project suggest that a similar pattern of asymmetry accrues in self-improvement communities on reddit, and that this is likely to be replicated elsewhere where there are similar discursive and social norms. I want to begin by presenting various data, before making a number of empirical observations that collectively constitute a contribution to our theory of accounting practices.

A thread discussing an article entitled ‘How the Paleo Diet gave me an Eating Disorder’ is instructive in understanding the asymmetry in accounting for ‘success’ and ‘failure’. The article chronicles a woman’s problematic relationship with food and how this was exacerbated by the attitude of the community she found herself in when she adhered to paleo.

Did anyone else read this and think that, the paleo community this woman is describing has nothing to do with the community I know. I take it as a given that every camp does things a little different, that individuals are tinkering (biohacking?), and that the 'experiment of one' is paramount in finding what works for you. If you let a minority of strangers on the internet, and a weekly dessert, drive you this crazy it says a whole lot about your psychology and very little about your diet.

VP 2 points

There are many people who want to be guided (told what to do) and are not interested in running their own experiment of one. And there are plenty of places that will guide folks, and not necessarily guide them well. But due to the psychological factors described in the article they may not be able to reason themselves out of trouble. The first group of people I met that did Paleo did nothing to make me interested in trying it. They made Crossfit/Paleo sound like a cult with the box as the church and rhabdo a devil you and to be cautious about.

ZTL 1 point

It's not about being able to reason, and it's not even really about the diet. The author stopped telling that story about 1/4 of the way through. It's about misplaced guilt, and putting way too much emotional weight on your diet. You shouldn't do that to yourself over food.

There is much to unpack here, beginning with the first comment. ZTL argues that the woman in the article is responsible for her issues with paleo, as she 'let a minority of strangers on the internet, and a weekly dessert, drive [her] this crazy'. In contrast, success on the diet is accounted for by 'tinkering' and the 'experiment of one'. Proceeding rationally from the evidence is responsible for success; psychological problems are responsible for 'failure'. VP responds in what they perceive as concurrence: some people 'want to be guided' and 'cannot reason themselves out of trouble'. Again, the argument is that level-headed self-experimentation results in success, while psychological problems cause failure. ZTL, though, responds by positing a different (though still asymmetric) account of their failure: 'It's not about being able to reason ... it's about misplaced guilt, and putting way too much emotional weight on your diet'. Problems with paleo are not caused by paleo, or indeed by the community, but by individuals' psychological failures. Rational self-experimentation would have seen them right.

Having corroborated the original formulation of 'accounting for error', there is a twist in the comments below, the first of which is replying to the OP.

PBR 28 points

It kind of seems like this person already had some form of an eating disorder or a bad view on health to begin with... before paleo. I'm over weight and working on eating better myself now but I don't

deny myself happiness or think that I'm lesser than just because my body isn't where I want it to be. I think having a healthy attitude and mind should come before having a healthy body. Personally I'm only over weight because I carried around resentment and judgements my whole life, constantly being down on myself and silently judging others which just leads to feeding my bad attitude with bad foods.

CC 2 points

I have some very close friends (6 - 3 separate couples) who have been on paleo for the past 5-6 years. I have noticed that they have all gained their weight back and I think it's because I watch them binge eat all the sweets that are paleo approved. I can't believe the amount after time they prepare and talk about the sweets and then they binge on it like no other.

ZTL 8 points

I think that any diet that's flexible enough to be useful is also flexible enough to abuse on the edges. You do have to do some self analysis and make adjustments along the way. And it's not all about weight.

PBR's comment follows a similar theme in arguing that the woman must have 'already had some form of an eating disorder or a bad view on health to begin with', accounting for her problems by reference to pre-existing psychological issues. However, their additional contribution comes when they speak of their own issues with weight and their current progress towards their goals, arguing 'I'm only overweight because I carried around resentment and judgements my whole life, constantly being down on myself'. Their *current* attitude is implicitly better, but their own personal failure is once again ascribed to psychological issues rather than environmental causes. Alternatively, psychological reasons may be seen as secondary to some other kind of mistake. CC attributes others' failure (in gaining their weight back) to a failure to *properly* adhere to the diet: 'I watch them binge eat all the sweets that are paleo approved'. ZTL corroborates this, stating that their 'abuse' of the diet's flexibility is to blame. Error, in the form of a failure to achieve one's goals, is accounted for by contingent and usually psychological factors.

In contrast, as we saw above, 'success' in making progress toward one's goals is accounted for either by the correctness of the diet or its ease of adherence (often then conceptualised in a finitist feedback loop as evidence for its truth). In a thread asking whether users find it necessary to track their caloric intake to lose weight, a number of answers take a similar position:

LRS 2 points

Just eat real food, exercise, and drink water. The weight will come off.

FGD 1 point

No. But we just eat real food and only do paleo baking once a week.

CBC 7 points

Nope. Just eat real food. Exercise. The weight will come off, or at least it did for me.

All of these answers put forward the implicit argument that eating paleo is eating ‘real food’ (in contrast with the ubiquitous ‘processed crap’ of the Standard American Diet), and that the result of this will inevitably be success in your weight loss efforts. Success, then, is explained by adhering properly to the diet, which in turn is explained by its correctness as a way of eating. Failure is explained by personal issues, or a lack of ‘proper’ adherence.

A similar pattern inheres in r/nootropics, where benefits derived from supplementation are accounted for by their efficacy, whilst failures are accounted for by personal issues. A first example comes from a thread about the commonly used anxiolytic L-theanine, where the OP is having doubts about the drug.

TWL 4 points

I hardly even noticed the effects for a few days. I was getting these headaches through day 3, but I think was just expecting it to be this miracle drug. Day 4 I woke up, took some l-theanine and drank a cup of coffee. No brain fog, no jitters. Got tons of work done for school. Two weeks in and it's been great. Once I stopped thinking about it like it's a miracle drug, it started doing wonders.

The difference here is once again located within the individual's attitudes: the drug will work, just so long as your expectations are not out of line with what it is capable of doing. TWL initially had an inflated idea of what L-theanine would do for him, but after adjusting his own psychological disposition, the drug simply worked correctly.

This pattern occurs when accounting for various kinds of difference, rather than simply ‘error’. We can understand ‘error’ as a divergence in understandings of the world where one party believes another to have a mistaken conception of the *actual* state of affairs. In contrast, the ‘accounting for *difference*’ I analyse here captures not just error, nor does it solely cover instances of disagreement between two people. Rather, it also accounts for *failure*, where an individual has

not managed to succeed in their goals. It further accounts for *success*, when individuals make progress towards or achieve their desires. Moreover, the asymmetry of accounting is often between one's *past self* and the choices and actions they took, and one's *present self*. The contribution this makes, then, is to extend upon our understanding of the justification for beliefs and actions in three key ways: first, in extending the literature on discursive accounting practices to cover 'educated laypeople' in communities of practice; second, in showing these accounts to cover not only error, but *difference*; and third, in illustrating how accounting practices are applied not only to others, but to the self.

Ubiquitous self-monitoring

In the sections above, I explored first the practice of talking about one's own experience, before analysing the justifications users give for their beliefs and behaviours. In this final section, I want to make the argument that *ubiquitous self-monitoring* is endemic to communities like r/paleo and r/nootropics. Users constantly quantify, document, record, consider, critique, and otherwise engage with their beliefs and practices in a way that helps them to achieve what they consider to be their short- and long-term goals. This is in line with the 'qualified self' thesis that Lee Humphreys (2018) puts forward in her recent book. I want to first look at the ways in which self-experimentation and self-tracking are talked about as *practices* in r/paleo and r/nootropics, including practices in r/paleo which resist the trend towards quantification as the main means by which goals can be pursued and achieved. I then move on to look at how these ideas of self-monitoring and self-tracking are talked about as means of acquiring and disseminating knowledge, exploring the fraught relationship that both communities have with the idea that self-experimentation is crucial to individual experience whilst also seeking to critique its failings from the perspective of desiring knowledge claims to be generalisable.

Self-monitoring and self-tracking practices

While self-experimentation forms a cornerstone of the worldview of both r/paleo and r/nootropics, the practices people engage in are by their nature not fully visible. The sources relied upon in this section, then, are the accounts users give of their practices and behaviours and are consequently subject to the possibility they are sanitised or idealised. With that said, interview participants were seemingly open and honest about their own practices and did not seem keen to present glossy or overly rigorous images of how they engaged with their diet or cognitive

enhancement. Rather, self-experimentation for some interviewees was seen as something that just happened over time through trial-and-error processes, in an unsystematic way. They would try something, see if it did what they wanted it to do, and discontinue it if it did not (or if they failed to make it a habit, and continuing to remember to do it became effortful for this or other reasons). This does not prevent them from being aspirational about how they *intend* to self-experiment in the future, however.

LA, who spent time lurking r/nootropics but had not yet committed to a nootropics regime, stated, 'I do self experiment but I don't do so in a systematic way. However, once I begin tapering my tranquilizers, I will be much more steadfast about trial and error with these supplements!' Similarly, interviewee LJ who came to r/paleo due to a chronic auto-immune disease compared the community to her experience with the disease, 'Crohn's is a highly individual disease, with lots of experimentation to find what treatments work for a given individual. It's not a stretch to see that same experimentation with this diet, for me.' She goes on, though, to allude to the common approach to both diet and cognitive enhancement outlined above: 'For others on paleo, I've seen people who say 'close enough is good enough, I have other shit to worry about in my life more important than the exact source of this coconut' or whatever'. I think most people are happy to think for themselves but still glad to the community and framework of paleo and r/paleo.' Her words lend credence to the idea that the proportion of people engaging in 'serious' self-experimentation is relatively low even in a dedicated community like r/paleo, and this is certainly corroborated by my own experience. A small set of highly motivated individuals engaged with self-experimentation and dieting in a way that was far beyond casual – for example engaging in multi-day water fasts, running ultramarathons on the diet, or adjusting their specific macronutrient and micronutrient balance and researching the precise kind of meat they ought to consume – but for many or even most of the community's members, self-tracking and self-experimentation were far more of a trial-and-error process where 'close enough' was an accurate descriptor of the desired outcome. For LJ herself, this approach seems to have delivered her to a diet she enjoys: '[I eat paleo rather than any other diet] because it works for me. I was an unhappy fat vegan a few years ago with bad skin, and when I started losing my hair I ate a steak. I tried keto and didn't feel great on it, either. This may be the most moderate of the 'extreme' diets, and it feels right for me.' For many users, this is what is meant by self-tracking: trying something for a time, seeing how it makes them feel, and then deciding whether to continue or to try something else. Self-tracking and self-experimentation in practice, then, are not the preserve of a dedicated community armed with spreadsheets and wearable

activity trackers; instead they are ubiquitous practices that most users of this kind of community engage in to a more or less conscious degree.

A similar pattern appears in r/nootropics, where the rigorous and quantified self-experimentation regimes of a few users are not necessarily representative of the majority of users. User SE, who had been using a stack of nootropics for a week, described his means of self-tracking:

‘I would say that individual response would be one thing that I enjoy learning about. In doing so, I learn more about my physiology and psychology than I could without hugely expensive tests. It may be somewhat lame, but I find myself really enjoying the prototypical ‘psychonaut’ experience. I enjoy being able to learn more about my own psychology in the ways that it morphs while under the influence of something.’

Far from ‘chasing the dragon’, as some users describe this almost recreational approach to nootropics, it appears that users like SE are genuinely engaging in a form of self-experimentation that relies on more qualitative judgements of the effects of drugs. SE justifies this, explaining, ‘self-experimentation with nootropics is difficult, just because the effects seem to be so easily explained by placebo. When experimenting with psychedelics, things are much easier, being that psychs have astoundingly profound effects in the short-term.’ He then explains his process of self-experimentation which relied on internally asking himself a number of questions about his emotions, cognition, focus, and motivation. He concludes, ‘Really, it’s not an objective method at all, and the information gained is not particularly useful but in the right circumstances, however, it’s really interesting to see how seemingly small effects lead profound change in thought patterns or general feelings.’ Not only this kind of procedure but this attitude towards one’s own experimentation was indicative of a larger set of individuals. Qualitative understandings of psychological and physiological changes were more common amongst interviewees than any form of quantification (even in a forum which encouraged participants to engage with free tools which aimed to measure such things quantitatively). Interviewee PA, who uses piracetam to aid with epilepsy, states, ‘I didn’t really have a way to interpret nootropic results, I was just waiting for something good to happen. It didn’t mentally, but as I said I noticed a definite reduction in myoclonus and that’s when I did more digging. I suppose if I were to take a new nootropic I’d do it the same way: am I more productive? Are new ideas forming? Is it helping with myoclonus or anxiety or is it making it worse?’ The things that matter

to all but the most dedicated of users, then, are questions of whether a drug or a diet is making them feel significantly better or worse.

For paleo dieter SM, self-experimentation is part of the package:

'If you consider someone with a history of trying different diets, it's all been self-experimentation. :) Sometimes it's as much about suiting your lifestyle as your body. And I tell people that. Try it. But if it's not for you maybe try CICO or Keto or something else until you find the one that works for you.'

With this said, what it means for the diet to be 'for you' is measurable and measured by most users. For some it was a reduction in anxiety or a felt increase in focus. For others it was a more tangible result, like a reduction in symptoms of chronic illness. For SM, it was that she felt like paleo improved her performance in a video game she played competitively, and that diverting from paleo made her performance suffer:

'I did get better at Battlefield 4 and 1 because of practice, but there were noticeable differences in my performance. I was number one in the world with one weapon and top ten with two others for Battlefield 1, so I did improve, but I can tell you that my kills definitely suffered on the days after I'd just had pizza or a cupcake. My focus wasn't as strong which made my accuracy suffer and my responses not as sharp. It's an amazing difference.'

Even with the capacity to engage in a form of self-experimentation that might allow rigorous quantification (as games like this usually have statistics which can be tracked meticulously over time), what SM cared about most was the felt difference in her experience when she was eating paleo versus when she was not.

This ambivalent attitude towards means of self-tracking that involve quantification was not confined to interview participants. Many resources devoted to paleo dieting are leery of popular means of 'assured' weight loss, such as calorie counting. Instead they prioritise 'food quality' and argue that 'the weight will come off' if you eat 'real food' in decent portions. A thread in r/paleo asks other users whether they count their calories, and responses are mostly (though not uniformly) against. I previously quoted user CBC in this thread arguing 'Just eat real food. Exercise. The weight will come off, or at least it did for me.' Another user chimes in that they

had previously 'had success losing weight tracking my calories', but that 'this time around what CBC said is exactly what is happening with me.' This is justified by the argument that 'calories in versus calories out' is not 'the whole story', but moreover other users argue that using tools like calorie counting is 'unmanageable' and 'unhealthy' due to the way in which they allow users to stay within the 'rules' by consuming food that is still 'unhealthy'. User PS3 argues 'Eating 2 big macs per day is certainly manageable for me; and a helluva lot easier. I don't do it because of manageability, I do it for health reasons (sodium, etc). Weight loss for the sake of weight loss is definitely not the optimal point of eating healthy.' In making this argument, they attempt to emulate the maxim that the central appeal of paleo is that it is a holistic approach towards health that eschews simple quantitative measures such as weight loss or calories.

Whilst other users in the thread above argue that new dieters ought to track calories because they don't realise how much they might be eating, the overall approach of paleo is one that emphasises conceptions of health that are unquantifiable. This to me explains in part the observed shift in emphasis within the r/paleo community over the last 4-5 years. In 2013-2014 the subreddit hosted many highly upvoted threads about significant weight loss, where the OP would proudly display images of their changed body and talk about how many pounds they had lost. These threads – and the images that go with them – are no longer particularly common in r/paleo. This is in part due to the popularity of the ketogenic diet, with keto replacing paleo as the popular weight loss diet of the moment. That means that more people who are coming to paleo are doing so for goals that are qualitatively measured, such as reduction in chronic inflammatory disease symptoms or an overall 'feeling' of health.

The 'core' of paleo, then, has become one that is primarily focussed on a holistic conception of health and wellness, rather than one that concerns itself with quantifiable 'results'. This in turn jibes with the mentality espoused in books like those of guru Mark Sisson, who argue that humans as a whole need to 'slow down' and return to primitivist ways of eating, moving, and living. The argument appeals to the idea that 'modern life' has led us to become enslaved to productivity and 'unnatural' ways of living. Consequently, paleo functions as a reaction against this form of life (which in turn is bound up with quantification discourses wherein 'results' are always things that can be measured on some form of scale). The key distinction to be made between this and the attitudes in r/nootropics is that those who come to r/paleo are often attempting to divert themselves from this mode of living and 'return' to some conception of holistic wellness which is apart from a productivity-focussed neoliberal late capitalism. In

contrast r/nootropics users are often attempting to ‘get an edge’ using nootropics within that same paradigm: many want to be able to focus better, improve their motivation, quell their anxiety, mitigate their depression, and so on, using drugs. The distinction is that r/nootropics users tend to want to change their bodies and minds in such a way that they can better function *within* an existing paradigm, whilst (some) paleo adherents attempt to fundamentally subvert that paradigm through changes in diet and lifestyle. This is far from ubiquitous, but the trend is one that is observably present.

Both communities, then, engage with self-tracking and self-experimentation on a ubiquitous level. The nuance I offer in this section is that these behaviours tend towards the qualitative rather than the quantitative, and even where the results can be quantified it is the *felt* changes in one’s body that are given primacy. Qualitative self-tracking may be motivated by an attempt to change one’s relationship with food and the world, as in r/paleo, or because quantitative means of measurement feel unattainable or meaningless, as with r/nootropics. While they have different motivations for engaging in these practices, both sets of users do so fundamentally because they see them as low-cost means of pursuing their chosen goals. Trial and error, then, is the primary means of self-experimentation.

Conclusions

As explored above, a key similarity between the r/paleo and r/nootropics communities is the emphasis both of them place upon the idea of ‘self-experimentation’, or ‘*n* of 1’ experiments. Of interest is the fact that the specific terms ‘*n* of 1’ or ‘experiment of one’, which come from the scientific and medical vernacular, are often used. Aside from playing in to ways of cultivating authority through the use of the scientific vernacular which I already analysed in Chapter 6, the use of these terms also indicates that users have some kind of commitment to self-monitoring which is formalised, or at the very least self-aware, over and above the ‘suck it and see’ approach to dieting that many people outside of dedicated communities often adopt.

A self-experimentation-based approach to diet and cognitive enhancement is often spoken of as a key way – perhaps the only way – of discovering what produces optimal results for you individually. In an r/paleo comment thread, moderator RTB states ‘paleo is about self-experimentation, almost first-and-foremost’. In *Wired to Eat* (2017) paleo guru Robb Wolf makes the argument that paleo is only a template which will work most of the time for most people,

and which adherents should use as a springboard for self-experimentation. In a previously covered thread about an article entitled ‘How the Paleo Diet gave me an Eating Disorder’, user ZTL’s top comment states, ‘I take it as a given that every camp does things a little different, that individuals are tinkering (biohacking?), and that the “experiment of one” is paramount in finding what works for you.’

In my interview with AA, he responded to a question about self-experimentation as follows:

In think in some sense (bearing in mind the huge possible margins for placebo effects) [self experimentation] is the only way to know if something really works for you. There’s also an interesting epistemological or ontological twist lurking in your question, I think: we tend to treat reproducible experimental results with large N as somehow the most real or valid – which I think it is in the sense of being able to communicate ideas robustly across channels where far too many people are involved for us to rely on individually trusting and understanding relationships to assess the quality of the information – but the lived reality of human existence is not a reproducible experiment with large N. It is exactly MY experience (and yours, and the individual experience of every person you might be talking to). In that sense, individual experimentation is actually the MOST real sort of knowledge we could actually gather – it’s just real knowledge that we can’t necessarily expect to be able to communicate to strangers across the world who have no a priori reason to trust our words on a page.

This answer gets to the heart of a number of questions about epistemic reliance and delegation of epistemic authority in communities like this one. There are very few reproducible studies with a large sample size that pertain to the efficacy of nootropic drugs or the paleo diet in achieving whatever set of goals. Even studies which fit such criteria are often conducted on patients with specific diseases, or populations whose conditions and characteristics cannot be easily mapped on to those of the forums’ users. Consequently, self-experimentation – whether that means quantification and an attempt to adhere to some conception of a scientific method, or simply ‘trial and error’ – is the ‘most real’ means of finding out what is effective for the individual. As I analysed above, users tend to seek out and listen to those who have experiences and conditions which are most similar to their own, and who have ideally already done what they wish to do, engaging in practices of *aspirational subjectivity*. But even those users’ experiences cannot map perfectly on to their own, which is why taking information from multiple sources – and, crucially, synthesising that information with their own experiences and tests – is the way in which many users proceed.

Users who spend time in r/paleo and r/nootropics, feel they have benefited from their way of life, and want to ‘give back’ to other users by passing on their experiences then are incentivised to *make their experiences congruent*. Answers which begin with ‘I, like you, have...’ are likely to be engaged with positively by the OP, as well as upvoted by bystanders who see them as engaging empathetically and in good faith with the needs of the OP. For all the rhetoric in these communities – particularly r/nootropics – about the importance of objective detachment and minding potential biases, some of the most important answers (and those to which users are most likely to delegate some of their epistemic authority) are those which demonstrate *empathy* and *identification* rather than relying upon biochemical mechanisms or epistemologically rigorous experiments. This is particularly interesting for r/nootropics, which differs from r/paleo in its comparatively rigorous approach to methodological critique but nonetheless has a similar kind of epistemic pragmatism exemplified through users’ attribution of authority to others who exhibit diminished subjectiveness, or to whom they can relate through aspirational subjectivity.

Whilst individual experience has primacy in determining what *individuals* do, then, there is significant room for *n* of 1 experimentation to be critiqued as a means of providing information for others to ingest and act upon. The term ‘*n=1*’ is used as a means of performing epistemic modesty (as with ‘hedging’ explored above and in the previous chapter), with users caveating their statements with ‘*n=1*, but these studies support my experience’, or ‘That’s my *n=1* experience with [nootropic]’. As previously explored, this may in fact function as an indicator of epistemic virtue and therefore make other users *more* likely to treat what a user is saying as well-founded or worth listening to. However, ‘*n* of 1’ is also invoked in conversation as a means of dampening the credence given to others’ arguments. For example, in a previously analysed thread about the placebo effect in r/nootropics, MAR argues that ‘valid studies that eliminate the placebo effect have to use numerous subjects, not an *N* of 1’, and ‘knowledge that you are doing a self-experiment will itself skew the outcome’. The argument being made here is that not only are *n=1* results not suitable for generalisation (which few have claimed they are) but also that they may even be *self*-deluding: that is, the very act of attempting to engage in some form of self-experimentation may alter the results of that experiment.

The consequence is that self-experimentation has a fraught reputation. It is perceived as one of the only options for exploring what works for the individual, as well as providing information that others take as potentially helpful or indicative if they identify with the user whose

experiences are being shared. However, it is also by its nature subject to the critique that it may mislead not only other users but the person engaging in the experimentation. To nuance the concepts of aspirational subjectivity and diminished subjectiveness, this means that even those who have walked a particular path may be subject to various forms of epistemic flaw, and consequently may not be reliable narrators of their own experience. Its use as an epistemic resource is far from unproblematic but can be explained in similar terms to those used to understand hedging and the use of anecdote at the beginning of this chapter.

8. Conclusions

In this thesis, I have analysed and synthesised a broad and interdisciplinary set of literatures and subjects. While most readers will likely be familiar with at least one of these, it is unlikely that many are familiar with all. As such, this conclusions chapter will be structured in such a way as to synthesise the multiple strands of analysis with the aim of providing a coherent explanation of how expertise and authority are constructed, negotiated, and mobilised in reddit's self-improvement communities. My hope is that this will provide a theoretical framework that other researchers may use for future work on these kinds of spaces. In addition, I want to nudge the debate around expertise in Science and Technology Studies in a direction that moves away from normative realism toward an attributionist account of how expert status is given, and the effects it has. I begin by working through a discussion of the nature of expertise, before moving to the concept of platform dialectics expanded in Chapter 5, followed by an analysis of the ideas of aspirational subjectivity, diminished subjectiveness, and pragmatist epistemology. The final section synthesises all these concepts, providing directions for future research and a statement of the intellectual contribution of my thesis.

Really rethinking expertise

Towards the beginning of the millennium, Collins and Evans worried that the problem of legitimacy – of ensuring that democracy was not undermined through the delegation of authority to experts – was being supplanted in importance by the problem of extension – trying to ensure that the *right* people were being considered experts (Collins and Evans, 2002). This stance was critiqued at the time, for it imagined the problem of individuals being undeservedly seen as experts to be much greater than it was, and the problem of unaccountable experts to be much smaller (Epstein, 2011; Jasanoff, 2003). Post 2016, the crisis of legitimacy appears to have only deepened, with mainstream media outlets decrying the rise of 'populism' and proclaiming that we live in a 'post-truth' era where publics have 'had enough of experts'.⁴⁸ An entire class of people called 'experts' has been created and tied together in the public imagination: a set of mostly men

⁴⁸ The latter quote is attributed to Michael Gove in an interview with Faisal Islam on Sky shortly before the Brexit vote. Amusingly, the quote is clipped: the full sentence is, 'I think the people in this country have had enough of experts, from organisations with acronyms, saying that they know what is best and getting it consistently wrong.'

with credentials, in mostly grey suits from universities or organisations with acronyms brought in to news studios to make predictions about everything from politics, to business, to economic trends, to foreign policy and technology. These are the experts of whom people have had enough. They have been tried and found wanting.

My contention in this thesis with respect to expertise has been that the account put forward by Collins and Evans, which has been influential in STS since the early 2000s, is facilitative rather than ameliorative to our current crisis of expertise. Their argument is that expertise is defined by tacit knowledge gained by immersion within a particular form of life, and that those who have *experience* of an area are those who should be listened to. I contend that such experience is neither a necessary nor a sufficient condition for expertise. What they are talking about is not expertise, it is *skill*.⁴⁹ When expertise is discussed in most contexts, there is a recognition that experts are those who not only have a particular kind of knowledge, but can *articulate* that knowledge and are trusted to be able to solve particular kinds of problems with it. The normative realist account of Collins and Evans removes this interactive aspect of expertise from the equation: experts are not required to be able to articulate themselves to an audience, but rather simply *are* experts, and therefore should be listened to on that basis.

The first problem with this chain of analysis is that it requires that audiences be the ones burdened with *recognising* experts. This is in spite of the fact that audiences are usually laypersons by comparison to experts in any given situation, and consequently are not best placed to make adjudications as to their competence if those experts are themselves not competent at articulating themselves. This leads to the second, and more important, problem. If would-be experts should simply be listened to by dint of their experience, this removes all requirement upon them to learn to articulate themselves in ways that are comprehensible, accessible, and persuasive to the lay audience.

⁴⁹ Note the critique that follows is not limited to Collins and Evans. Any account of expertise which attempts to elide the distinction between *competence* and *attribution* as necessary conditions for expertise falls prey to similar problems. This includes accounts of expertise rooted in competence or skill (Dreyfus and Dreyfus, 1980; Goldman, 2001; Scholz, 2018; Watson, 2018), or the ability to solve problems of a particular kind (Majdik and Keith, 2011; Quast, 2018). There are extant attributionist accounts of expertise (Goodwin, 2011; Hardwig, 1985; Stichter, 2015; Wagemans, 2011), but these are comparatively less well-cited or recognised in STS than Collins and Evans or other competence-based accounts.

The findings of this thesis, particularly in Chapter 6, demonstrate the poverty of this vision of expertise. Being listened to in an online setting is not simply a function of experience (or credentials, or track record, or any of the other markers of expertise put forward by Collins and Evans). Rather, the users who are consistently listened to and rewarded by other users for their contributions are those who are able to articulate themselves in a way that is accessible and useful to other users. These are the users who are *attributed* expert status by having epistemic authority delegated to them. Users who are able to synthesise large amounts of information quickly and present it in a comprehensible format are attributed this status. Users who lean on the hallmarks of scientific discourse such as citations, stating the limits of one's knowledge, and nuanced methodological critiques, are also rewarded. Users' experience may *facilitate* their ability to make posts that display these traits, but it is not sufficient in itself to be considered worthy of expert status.

As such, the normative realist model of expertise should be rejected for two key reasons. The first is that it has bad outcomes when adopted. When would-be experts are able to say that they should be listened to without regard for the needs of articulating themselves to a particular audience, they are more likely to be spoken over by those who do not know what they are talking about but are highly skilled at seeming like they are. There will always be such people who develop the skills of rhetoric and persuasion and use them to their benefit. If those who *do* know what they are talking about fail to develop those same skills – and they are more likely to do so if we fetishize experience as the *sine qua non* of expertise – then they will fail to overcome the charlatans.⁵⁰ Moreover, would-be experts who know what they are talking about, but are bad at explaining it, are far more susceptible to the kind of critique that says they are misleading the public, or making unwarranted predictions, or claiming they have all the answers and consistently getting it wrong. This in turn renders it easier to place all these experts in one box and write them off when their predictions fail to come true. The normative realist model facilitates complacency and exacerbates the problems of 'post-truth' politics, in turn aggravating the crisis of legitimacy.

The second reason for rejecting the normative realist model of expertise and substituting in an attributionist model is because attributionism better accounts for how people actually behave. This thesis only examines the online world, and my observations are circumscribed to two

⁵⁰ Assuming we know who these charlatans are, of course.

communities, but the findings are robust. Neither credentials nor experience are enough to win over an audience if a user cannot ‘talk the talk’. If a user claims to be a medical doctor or nutritionist, they are not going to be listened to in r/paleo or r/nootropics unless they put work into their comments to demonstrate that they also know what they are talking about. In part, this can be attributed to the old adage that ‘on the internet, nobody knows you’re a dog’: it is very difficult to verify that a user is who they say they are. Consequently, the easiest way to assess their credentials is to read what they say and see if it lines up with one’s perceptions of what a person with those credentials ought to know. However, the more important reason that credentials and experience alone are unimportant is that, on their own, they do not *help*. The users who are listened to and attributed expert status on r/paleo and r/nootropics are those who are able to articulate themselves skilfully, respond to questions quickly and helpfully, synthesise their own experience with biochemical concepts, provide specific and nuanced responses, and recognise the limits of their knowledge whilst directing the enquirer to where they might learn more. Simply attesting that one is in fact a nutritionist and posting a short comment is far less helpful than taking time to craft a comment that carefully addresses another poster’s needs. For the purposes of the conversation at hand, the second person is more likely to be attributed expert status (in that they have epistemic authority delegated to them). My contention is that this is *correct*. They *are* experts in this context, because they are helping a particular audience solve a specific problem, and they are doing so skilfully. This expert status is subject to revision at a later time, and it may come to pass that their previous comments are seen in a different light if they later prove themselves to be incompetent, or if their post history is examined and found to be full of nonsense in other places. However, none of this negates the fact that expertise is best understood as a *status that is attributed* rather than a *thing which one possesses*. This is the fundamental reason for rejecting normative realism and embracing attributionism in order to understand expertise in the online world, and this is a key theoretical contribution of this thesis.

While much of the critique I articulate here is directed at Collins & Evans and their ‘normative realist’ account of expertise, this is not to say either that everything they have said on the subject ought to be rejected, nor that the contributions of this thesis should be understood solely in relation to their argument. As I noted in Chapter 3, Collins & Evans’ notions of *interactional* and *contributory* expertise are a useful addition to our conceptual vernacular. Moreover, the idea of interactional expertise in particular coheres with some of the argumentation I have put forward throughout the rest of this thesis. There are many users in online self-improvement communities who do not actively contribute to a field of study, and nor do they necessarily have formal

credentials in nutrition or pharmacology. However, they are still recognised as experts, or attributed expert status, by dint of their ability to articulate useful arguments about the subject at hand. While I maintain that there are both normative and descriptive issues with their work, Collins & Evans provide us with useful concepts that can help to make sense of some of the observations and findings articulated over the course of this thesis. The theoretical contributions I make in this thesis are also not restricted to responses to Collins & Evans, though reading and analysing their work was part of the initial impetus for this project. The argument that expertise should be understood as an attributed status rather than a substantive possession is one that a significant number of theorists must engage with if their accounts of expertise are to stand. Moreover, understanding expertise as attribution holds a number of key advantages – articulated above – that stand independently of any critique of alternative accounts of expertise. Finally, the arguments I have put forward in this thesis regarding expertise and how it relates to authority are salient to discussions of biopolitics, embodied/experiential knowledge and authority, and who gets to be considered an expert or given a platform in a given forum. Bringing my account of expertise as delegated cognitive authority to bear upon these questions would be a fruitful endeavour, given its applicability to contemporary online health movements and the strong resemblance these bear to many other communities and movements.

Navigating reddit's epistemic landscape

The internet, for all its abundance of information, appears *prima facie* to be a difficult place to gain some kinds of knowledge. Other users are often anonymous or pseudonymous, their credentials and motivations are difficult to examine, and our relationships with them may be fleeting. Communities are transitory and ephemeral, and it can feel as though one is speaking to an undifferentiated mass of invisible other people, all of whom are judging the things you say on metrics that you may not be able to understand. There is more information accessible through fewer access points to more people than at any previous point in human history, and yet the difficulty of discerning the signal – the useful information – from the noise can feel insurmountable.

The communities I have analysed in this thesis are two examples of places in which these difficulties are negotiated on a daily basis. They are *communities of practice*, built upon the idea that particular forms-of-life can have their worldview codified in a comprehensible manner that allows curious newcomers to understand and access the space they are entering into, whilst also

taking care to limit the number of times experienced users have to answer the same questions. In both r/paleo and r/nootropics, the worldview is one that rejects what is seen as an unfair and unearned epistemic hegemony on the part of 'traditional' authorities such as medical professionals and governments. For many users, doctors and state institutions give advice that conflicts with their experience of the world. They were told that fats, particularly animal fats and saturated fats, were unhealthy; they switched to a diet with large amounts of saturated fat and they saw their health outcomes and indicators improve. They were (and are) told that substances like kratom, a plant used to deal with opioid addiction, are dangerous and should be kept out of reach. For many, this plant has apparently made a difference that is borderline miraculous. When asked to choose between the evidence of their eyes and the words of detached elites, they believe in the things they themselves have experienced. Furthermore, they believe in each other: learning from other users with experiences or conditions similar to their own, who have walked the path they themselves have walked or wish to walk. This use of *aspirational subjectivity*, a concept I have developed throughout this thesis, is both endemic and indispensable to the users of online self-improvement communities.

Additionally, the attribution of authority to other users through the mould of aspirational subjectivity is tempered by the configuration and power dynamics of the community itself, which are mediated through the *platform dialectic*, a concept I have also developed over the course of the thesis. Most people who participate find their content or comments voted and commented upon by other users. Voting users are invisible, so having a post or comment downvoted can often feel as though the silent audience is judging and criticising you *en masse*. Likewise, engaging in comments is a performance, taking place in front of an audience of redditors whose desires can only be imagined. Nonetheless, the engaged user learns over time what kinds of comments appeal to other redditors and learns therefore to tailor their content to the mode of geek masculinity that is almost hegemonic on reddit. They learn that posts that appear overly driven by emotion without a heavy dose of irony or self-awareness, or posts that attempt to demonstrate intellectual superiority without at least appearing to be grounded in evidence, are unlikely to be upvoted. On the other hand, posts that include links to sources, indicate clearly the boundaries of the user's knowledge, and include scientific vocabulary or other articulations representative of the accoutrements of science, are likely to be rewarded. There are very specific styles of post that are rewarded on reddit, and the key to being upvoted in any given situation is recognising how to write in that style and then adapt it to the situation at hand. These are often the posts that appear to signal a user's *diminished subjectiveness*: their greater degree or quality of

experience with a subject that renders them less subject to bias as a result of exposure to limited or low-quality evidence. While these subreddits are large enough and ephemeral enough that most users are unlikely to be recognised by more than a handful of others, users who consistently contribute high-quality comments and posts over a long period of time come to be known within the community as valued members. Sometimes they are (or become) moderators, but in many instances they are just regular users with a lot of experience or skill who happen to want to contribute a significant amount of time and energy to discussing very specific topics with internet strangers. These are the users it is easiest to see as possessing expert status in each community, and this is particularly important in communities where there are high stakes or vested interests at play. In r/paleo, these interests play out through the need to be careful with how users are treated in order to avoid alienating them and driving them away to one of the other, perhaps more welcoming, diet communities. In r/nootropics, the looming possibility of legal regulation or reputational damage to the nootropics community is one that encourages moderators to take a firmer stance on regulating the quality of posts. This in turn can upset users who wish to discuss, for example, their experiences with modafinil and feel they are being filtered out of the community unfairly. The platform dialectic mediates discourse, in turn influencing how the attribution of authority is mediated through aspirational subjectivity and diminished subjectiveness.

At the centre of these communities are moderators. These volunteers either created the subreddit or have since been drafted in to help run them. They perform civic labour (Matias, 2016), which is often unrecognised and underappreciated: deleting irrelevant posts, formulating rules, warning and banning users who break those rules, creating and editing FAQs and other ‘public goods’ (Kollock, 1999), creating new subreddits to host content that is flooding the main subreddit, and participating through comments and submissions (often guiding newer users to resources, answering common questions, and resolving disputes). Moderators usually have a particular vision of the community’s purpose and how that purpose can best be fulfilled. For example, the r/paleo or r/nootropics moderators might want ‘their’ subreddits to form a community for like-minded individuals, but also serve as a knowledge base for anyone seeking to know more about the paleo diet or cognitive enhancement. They tailor their use of reddit’s features in an attempt to bring that vision to life. Other users respond in turn to these actions, often subverting the expectations or desires of moderators. They may vote based on agreement rather than contribution, continue submitting posts that moderators consider undesirable,

proselytise about their interpretation of paleo, or participate in any number of ways that undermine the integrity of attempts to make r/paleo and r/nootropics viable epistemic projects.

Because each of the communities is relatively large, with over 100,000 subscribers, there is necessarily a wide variety of types of user. In r/paleo there are users who come to share recipes, users who want to lose weight, users who want to ameliorate their chronic illness, users who want to fantasise about the paleolithic period, users who have just begun their diet and want to share their successes, and users who are struggling to maintain their course. In r/nootropics there are users who come to share their first experiences with modafinil, users who want to rid themselves of opioid addiction, users who have used Adderall all their lives and have become used to the idea of using drugs for cognitive enhancement, college students who want to improve their grades, users who want borderline recreational experiences, users who want to extend their lifespan, and workers who want to increase their productivity. Neither of these lists comes close to capturing the full variety of users of either subreddit, but it does give some indication that the kind of content that is favoured by one set of users is unlikely to be the content favoured by all.

Consequently, there are fundamental tensions within each community over what the subreddit ought to look like: what content should be posted and what is just spam, whether the community is for building scientific knowledge or sharing experiences, how to promote the growth of the paleo diet or nootropics industry without inviting in vendors and would-be gurus who have only their self-interest to contribute, and so on. Much of this thesis has focussed on how these tensions are negotiated within both communities. In r/paleo, the rule that users should not attempt to proselytise about their 'one true paleo' has become one of the main means by which peace is maintained between the various kinds of users. Not only does proselytization tend to cause bitter arguments which can drive off new users and make the atmosphere of the subreddit seem more hostile, it also goes against the individualism propagated by more recent popular works in the paleo canon which emphasise the differences between individuals' genetic makeup and therefore the foods that they are optimised to consume. Simultaneously, and in tension with the foregoing, boundary work has become one of the most important tools in the discursive arsenal of users attempting to maintain epistemic harmony within the subreddit. Because the paleo diet has so many variants and there is no 'one true paleo', a lack of unifying characteristics means that users see it as at risk of becoming a meaningless label. Policing the boundaries of what paleo *is* and *can be*, then, is vital to maintaining a coherent paradigm within which

productive discourse can occur. In r/nootropics, the inclusion and propagation of information about the reliability of various vendors (particularly when vendors appear to have been selling counterfeit or low-quality product) is a vital mechanism for ensuring that the nootropics market remains safe and scandal-free. As in r/paleo, users make use of boundary work as a means of policing the lines between cognitive enhancement and recreational drug use. They do so in part because of fear of law enforcement crackdowns and FDA regulation, in part out of concern for the safety of impressionable new or vulnerable users, and in part to maintain the epistemic integrity of the space as one in which nootropics are the central topic of discussion. In both subreddits, users who post perceived low-quality content, purport to know more than they do, or come across as overly hostile are likely to find themselves subject not only to downvotes, but to mocking comments from other users who effectively police the kinds of content considered meritorious within their community.

The affordances of reddit give structure and direction to the kinds of conversations that occur there. More importantly, though, these affordances shape the kinds of *people* who join and participate in the community. Reddit's core userbase has always been male, North American, English-speaking, small-L liberal, and STEM-oriented. These are the 'invisible' users appraising your comments; the homogenised 'redditors' to whom comments are often implicitly or explicitly addressed. The platform would be nothing without the people who participate in its communities, and these communities are given life primarily by individuals with no fiduciary stake in their success. Volunteer moderators and highly engaged users may be rewarded with social status in a very circumscribed sphere, but they participate and help and give their time and labour primarily because they care about these communities and the topics they revolve around. They also do so because participation seems just as helpful to them as it is to others. Where this is not the case, users can become very wary, very quickly. Accusations of vested interest or of biased moderation are taken extremely seriously: they pollute the perceived intellectual purity of the community project, turning them into tools for financial gain for individuals or businesses. This is seen as against the fundamental ethos of reddit, and perceived violators must be careful to avoid ostracization or the perpetual distrust of the community at large.

These are only two communities out of tens of thousands. Nonetheless, the observations I have made should be both interesting and useful to other scholars of online communities. The concept of *platform dialectics* I have developed (Squirrel, 2019) is applicable to users in other spaces as a means of understanding the relationships between those who have differential levels

of formal power and control over the features of the platform. There is much more work to be done on applying this concept not only to two-party relationships, such as those between users and moderators, but multi-party relationships, such as those between users, moderators, and administrators. Such relationships can only be properly understood through careful analysis and detailed development of the powers, interests, actions, and responses of users in each group. In the context of Reddit itself, there are issues which may be elucidated through the application of platform dialectics, particularly pertaining to the relationships between administrators and the end users and moderators of ‘controversial’ or political subreddits. For example, recent controversies on and around reddit have brought into focus the difficulties administrators face in attempting to maintain a commitment to ‘free expression’ whilst balancing the need to appeal to advertisers who do not wish to pay for their products to appear next to controversial content. All parts of the political spectrum engage in heated debate about the boundaries of acceptable discourse. Another issue of note is the rise of ‘super moderators’, who are on the moderation team for dozens or hundreds of subreddits. These users, who devote a significant proportion of their time to moderating reddit, may have different relationships with administrators, other moderators, and the end users of the subreddits they moderate. They are sometimes brought on board the moderation teams of controversial subreddits in order to maintain order, or to prevent those subreddits from being banned from reddit. This class of users would certainly be an interesting topic of study, and such a study would benefit significantly from the platform dialectics concept.

Outwith reddit, debates over content moderation on major social media platforms such as Facebook and Instagram are slightly different, in that content moderators tend not to themselves be members of the community they are moderating. There are significant exceptions to this, however. Facebook groups and YouTube comment sections are managed by community members and content creators respectively. The former are structured in a way that is similar to subreddits, and the platform dialectics concept could be fruitfully applied to them. The latter can currently only be moderated by content creators themselves, and this creates unique affordances and inflections to the creator-audience relationship that would be worth exploring. Finally, discussions of how social media platforms facilitate health-related movements (such as anti-vaccination groups or alternative ways of eating) could benefit from a developed understanding of how and why users find content authoritative or believable, drawing on my studies of expertise and rhetoric. I hope to see more work that utilises both platform dialectics and my elaboration of how authority is constructed in online communities.

Aspirational subjectivity , diminished subjectiveness, and epistemic pragmatism

It is common for individuals in any knowledge-centred community, particularly one that lionises the norms of objectivity and rationality associated with STEM, to profess that they are willing to believe (only) what there is evidence for. A stated subscription to this form of naïve scepticism is belied by the actions and words of users of communities like r/paleo and r/nootropics. Not all evidence is treated equally, and nor are all speakers listened to with the same attentiveness. In the sections above, I have spoken of some ways in which this plays out. Here I want to elucidate *why* this happens in the settings I analysed. Users demonstrate clear trends in the attributes of experts they prefer to listen to. Some say that they want arguments backed by ‘common sense’ or ‘level-headedness’; others profess a proclivity for speakers who are willing to admit that they were previously wrong and critically engage with the evidence for competing positions, demonstrating an adherence to sceptical or empiricist norms of belief formation. Likewise, users appear to have a need to find common ground with others; they find their arguments more compelling or their advice more relevant when there is some important similarity between them. What unifies these users is their desire for something that *works* for them, and what mediates this kind of epistemic pragmatism is often one or both of the two concepts I have developed through this thesis: aspirational subjectivity and diminished subjectiveness.

In Chapter 3 I formulated the concept of ‘aspirational subjectivity’, arguing that users of communities like r/paleo and r/nootropics tend to listen to those who have already walked the path they themselves wish to walk. This splits into two strands of analysis. First, users draw similarity relations between themselves and other users – by dint of their background, appearance, health conditions, history, or a multitude of other factors. When they are able to do so, they are more likely to listen to what they have to say. Other scholars have demonstrated this phenomenon in patient communities (Mazanderani et al., 2012); the contribution here is to show that it applies to users in online spaces, as well as to individuals in self-improvement communities who are not necessarily patients. A second and more original contribution comes from my analysis of aspirational subjectivity as constituted by listening to those who appear to have diminished bias or a reduction in *subjectiveness*. These users appear to have more experience in this particular field, and consequently are more aware of what kinds of information and factors to take seriously, and what ought to be ignored. This means that the user with diminished subjectiveness is better able to give advice by dint of their explicit knowledge of the literature,

biochemical principles, and so on; as well as their tacit knowledge of how to combine these things into advice and arguments that seem compelling.

This last observation lays the groundwork for one further piece of synthesis. I want to make the argument that aspirational subjectivity extends to include putative experts who appear to possess *epistemic* or *cognitive* attributes that the comparatively inexperienced user wishes to also have. For example, this might include users who demonstrate knowledge of biochemical mechanisms, can synthesise significant amounts of complex evidence and present it in an articulate manner, or who appear to demonstrate a lack of bias or a degree of (what is perceived as) objectivity or humility in their comments. In the same way that users listen to and take advice from those whom they imagine as similar to themselves, but with more experience of some relevant factor, they also listen to those who seem to possess attributes they themselves value. r/paleo, r/nootropics, and reddit at large are all communities which place significant value on what are considered the ideals of science: dispassionate observation, epistemic humility, accuracy and precision in words and measurement, objectivity, rationality, and so on. These are all contested traits and values, but users have in their mind some idea of what they look like, and they know them when they think they see them. When they see them, they listen to those who bear them. Diminished subjectiveness, then, functions as a means of attributing authority to those who seem to be less subject to bias as a result of having only limited exposure to the field of evidence. These figures are seen as less likely to place undue weight upon a small amount of evidence, or evidence that may appear strong but is flawed in significant ways.

As such, what seemed in the beginning to be two arguments are in fact one. The first argument was that individuals tend to listen to people who engage in rhetoric and logics that chime with their intuitions and cultural background. The second was that users listen to those who have experiences they themselves wish to have, and who are also similar to them in some way that seems relatable or relevant. These two arguments can be combined. Users of r/paleo and r/nootropics listen to those who demonstrate facility with rhetoric and logics associated with STEM and its values *because* they perceive them as possessing similar values, as well as abilities or experience they themselves wish they could have. Aspirational subjectivity encompasses background, experiences, values, skills, and abilities. We listen to those who seem similar to us in crucial ways, and what those ways are is tempered by our cultural background, our firmly-held beliefs, our values, and our desires. Diminished subjectiveness also exemplifies our desire to listen to others who might be less likely to be unduly influenced by problematic evidence or

experience, and our recognition of this diminished subjectiveness is mediated through all the rhetorical techniques I have discussed in this thesis, as well as the functionality of platform dialectics that mediates all discourse in these spaces.

In addition to aspirational subjectivity, I also called upon the concept of *epistemic pragmatism* to describe the attitudes of r/paleo and r/nootropics users towards belief and evidence. While some users had complex approaches to and conceptions of human optimal nutrition or cognitive enhancement, the majority were less concerned with whether their theory tracked truth than whether their current practices *worked* for them. Something ‘working’ was understood in a pragmatic fashion, meaning that it was moving them towards the goals they had formed for themselves, and ideally doing so at a fast enough, and sustainable, pace. In other words, what is *true* is what *works*. In many instances, what works for one person does not work for others. Therefore, what is true for one person may not be true for other people.

This trend towards epistemic pragmatism can be incorporated into the idea of aspirational subjectivity. When seeking out people or non-human actors to delegate authority to, users will often opt for those who are able to give them advice that *works*. At first sight it might seem this cannot be what *initially* attracts someone to a guru or FAQ: they have not experienced their advice and so cannot know whether it works for them or not. This is a fair criticism, and initial attraction is often due to other factors: recommendations, visibility, accessibility, and so on. However, many experienced paleo gurus and cognitive enhancement enthusiasts make recommendations that *others* say have worked for them. If those others bear some similarity to the user seeking out information, then it may appear that this person is capable of giving advice that works for people who are meaningfully similar. What works for similar others may be true for them. As such, the pragmatist paradigm can be applied not only to what people believe, but to *who* they decide to believe. Whom one chooses to give expert status is a function, in part, of how well their advice appears to have worked for other people. It is unsurprising, then, that so many self-improvement writers take pains to publish and make visible the testimonials of those for whom their advice has been helpful.

Synthesising pragmatism, platform dialectics, and attributionism

Finally, the doctrines of pragmatist epistemology and aspirational subjectivity can be meaningfully combined with our analyses of platform dialectics and attributionist expertise to

give a fully-fledged understanding of how expertise operates within online self-improvement communities.

Users tend to listen to those who display similar values to them, as well as a facility with skills they aspire to possess, and experience walking the path they wish to walk. They draw similarity relations between themselves and putative experts, with a greater propensity to listen to those with whom they share some similarity they deem important or significant. They work within a pragmatist paradigm, taking heed of advice, which *works* without necessarily caring whether it is theoretically correct – or believing the theoretical framework of, and evidence for, whatever advice works. There is a general recognition within r/paleo and r/nootropics that the community ought to be providing advice and recommendations that are likely to *work*. This is true regardless of the differences between the two communities, mediated by their power dynamics, central concerns, moderation practices, and the subsequent platform dialectic; and it is true of online self-improvement communities at large because their aims are broadly similar in that they want to recruit and keep users whilst providing information and a space for healthy discussion. Newcomers have a variety of goals and starting positions, and so public goods like FAQs and posts for beginners function not only to immerse them in the worldview of the community but also to provide what seems like a reasonable conception of what they may or may not be able to achieve through the paleo diet or cognitive enhancement. The things that are most likely to work are placed front and centre in these documents: improving sleep, taking up regular exercise, cutting out particularly pernicious foods, and taking the most tried-and-tested combinations of supplements. In the context of posts asking for and giving advice, users will tend to upvote content that conforms with their existing worldview, as well as the rhetoric and logic of science and geek masculinity. However, they will also upvote *experience*: what has worked for other people and may work for others reading the thread at that moment in time. This experience must still be presented in a way that conforms with the social norms of the forum, but other users will give credence to well-written experience posts because they purport to be based on something that has *worked*.

Because of the sheer volume of posts and the transience of most community members, it is rare that individuals are able to gain and maintain expert status within either forum. However, in some instances users who conform particularly well to the attributes described above may be able to gain a reputation for giving useful advice or making compelling and well-backed arguments. These users have enduring expert status within the community, based on the

delegation of authority by other users. They are likely to be upvoted in most instances when they post, and their comments receive more attention than those of other, unknown, users. They may come to act differently as a result of this status, and this in turn may affect the way in which they are treated, in an open-ended dialectic between those users who have power and the invisible (and mostly silent) majority.

As I highlighted in the introduction and elsewhere in the thesis, it is important to keep in mind that both of these communities appear somewhat idiosyncratic from an epistemic perspective. They resist particular modes of medico-scientific authority and credentialism, replacing them with their own ways of knowing and mechanisms for delegating authority. Because they are communities which are in some way formed as a subversion of the mainstream, their ways of knowing have been shaped by the need to demonstrate the internal consistency and evidence base of their worldview to newcomers who might initially be sceptical. This means that their ways of knowing may well be quite different to those found in communities where there is not the same tension over *who* ought to be believed, whether individuals are acting in good faith, and what kinds of experiences ought to be validated or deemed worth deferring to. With that said, *idiosyncratic* is perhaps the wrong word. For while these two communities may not resemble epistemic communities or communities of practice where knowledge is less contested, they certainly provide ample illumination of what *this kind* of community looks like. That is, we can learn from them how we might understand authority and expertise in other subversive online communities of practice, as well as other online self-improvement communities that share similar aims and concerns. We can also gain from this thesis a thoroughgoing and full-blooded understanding of the nuances of how authority and expertise are constructed and negotiated in online spaces, and how the platform dialectic mediates the attribution of expert status or authority.

Consequently, the conclusions of this thesis reach much further than these two examples of self-improvement communities on reddit. When considering expertise in other, similar settings, it would be wise to focus on how the structure of the platform influences discourse, how users engage in pragmatist discourses around their needs and goals, and the roles of aspirational subjectivity and diminished subjectiveness in the attribution of expertise. Without considering how users relate to others who have experienced the phenomena they themselves wish to experience, or how they attempt to find others who may be less subject to bias as a result of limited exposure to evidence, or considering how these attribution mechanisms are mediated

through the central concerns of the community and dialectic of the platform, there can be no complete understanding of authority and expertise in an online community.

The internet, online communities, and social media platforms now have a pervasive impact upon the lives of billions of people worldwide. Both the number of people spending a significant chunk of their time online, and the level of engagement they have with online content, are only likely to increase for the foreseeable future. If you grew up from the early 2000s onwards in Western Europe or North America, the likelihood is that you have rarely had to wonder about the answer to a question that has previously been asked by someone else, because finding *an* answer is as simple as knowing how to use a search engine. Equally as important is the fact that most questions do not only have one answer: they may have two, three, or hundreds of answers, constructed by different people in different places, at different times, for different purposes. Many of these answers will contradict or be in tension with one another. Understanding how people navigate the increasingly rugged epistemic landscape of the online world is increasingly important to understanding how we form our beliefs about the world. Very few authors have previously considered not only the affordances of online platforms, but how those affordances interact with the ways in which people come to trust, believe, or delegate epistemic authority to other people. This thesis is a valuable first step in demonstrating how these complex epistemic relationships work now, and how they are likely to continue to work for as long as the internet is a significant part of human life.

Appendix 1: Interview Schedules and Introductory Posts

/r/paleo post

Tuesday, 10 October 2017 10:13

Hi everyone! I need your help. I'm a PhD researcher at the University of Edinburgh, and my thesis is looking at the ways in which authority and expertise are constructed and negotiated in online communities. I chose to look at nutrition and fitness forums on the basis that there's so little consensus in nutritional science that it makes the area really interesting in terms of the kinds of arguments that people have about what we ought to believe.

I've been reading /r/paleo pretty intensively for about 6 months now. As in, I've read every single post from the last 6 months, and then a lot of the top-upvoted posts of all time, the last year, etc, plus a lot of the external resources linked from here. I've read Cordain, Wolf, Taubes, and Sisson. I've listened to a bunch of paleo podcasts. I've explored adjacent communities and programmes. In short, I've spent a *lot* of time trying to understand the paleo community.

I came in with a little bit of skepticism, having been indoctrinated into the same kind of mainstream nutrition as most people (Whole grains! Unsaturated fats! Everything in moderation!). But the sheer volume of literature, posts and testimonials I've read has shown me just how much diets/lifestyles like paleo have to offer. I was also diagnosed with IBS during the course of my research, and to be honest I've struggled (and continue to struggle) with diet and body image for a very long time, so it's been a pretty intense experience.

The thing is, I don't think that just observing and reading posts is enough to get the full picture of what people believe and why. I want to paint a portrait, not produce a rough sketch. And that's why I'm posting this. I've had some long chats with a couple of the subreddit moderators already, but I need more.

I'm looking to interview as many people as possible. It can be on this thread, or by PM, by email, by skype - you get the picture. The things you say will be anonymised, though obviously if/when my work is published (fingers crossed it's before my funding runs out) you're very welcome to own the things you said.

There are a few questions I want to ask everyone, but in most cases I just want to see where the conversation goes. I want to know things like **what drew you to paleo over any other diet**, or **what keeps you going**, as well as a bunch of other stuff.

If you're up for it, I'd really love to hear from you. I can't offer any kind of financial incentive, but the things you say will help to inform what I hope will be a really interesting and fleshed-out account of how communities like this function. You can catch me on here, or there are contact details on my website (which also contains a lot of my writing, in case you're interested): <http://www.timsquirrell.com/contact>.

Figure 6 - submission to r/paleo soliciting interview volunteers

Questions to ask /r/paleo volunteers

Wednesday, 11 October 2017 09:07

1. What was it that first drew you towards paleo as a diet/lifestyle?
 - a. How long have you been doing this? What would you say your dietary regime looks like?
2. What kind of changes do you feel that you've derived from this way of living?
3. If you've been doing it for a long time, what's kept you going?
4. Where would you say your primary information sources for diet and nutrition are?
5. What are your thoughts on the idea of "evolutionary nutrition" that underpins paleo?
6. There seem to be multiple interpretations of paleo: as a set of rules as to what you should and shouldn't eat; as a guide towards a healthy lifestyle; as a springboard into self-experimentation; or as an overall way of life. Do you have a particular conception of what it means to you, or what you think it should mean?
7. What makes you more or less likely to listen to someone when they're talking about diet, nutrition and fitness?
8. How would you describe your view of nutritional science? Do you have particular people or institutions that you think are worth listening to?
 - a. Do you think that the scientific evidence points in a particular direction?
9. Why is this the way that you have decided to live and eat, rather than, say, keto or vegan or any other diet that's outside of mainstream dietary advice?
10. One of the big themes I've noticed in paleo is the idea of self-experimentation. What role would you say this has played in your personal experience? Why do you think it's such a recurring idea?
11. I've noticed that a lot of people's conception of paleo seems to revolve pretty heavily around meat, and there seems to be quite a "masculine" bent to the whole community. Like, "you can eat all the steak you want and still lose weight!" Have you ever thought about the gendered dynamics of the community at all?
12. A lot of paleo "gurus" seem to have a whole schtick that revolves around the idea that they have "nothing to sell" - they're not hawking supplements at you, or trying to get you to buy expensive diet products. What do you think of that kind of strategy, as opposed to, say, the traditional WeightWatchers style of rhetoric?

Figure 7 - interview schedule for r/paleo participant

Questions to ask /r/Nootropics interviewees

Thursday, 15 March 2018 13:48

Thanks a lot for volunteering, I really genuinely appreciate it. There's only so much that you can get out of reading people's posts, and talking to the actual redditors behind the screen-names is really important for making sure that the analysis I'm doing is grounded in authentic experiences.

The basics:

1. Could you tell me a bit about yourself - your age, gender, employment status, educational background etc?
2. What do you understand "nootropics" to be?
3. How do you currently use nootropics? If you're not a regular user, what is it that draws you to this subreddit?
4. How long have you been using nootropics for?
5. Do you have any experience using other kinds of drugs?
6. What was it that first drew you towards the idea of nootropics?
7. What do you think you get out of it?
8. Is there something specific that keeps you going?
9. Where do you get your nootropics from?

Getting into a bit more depth:

8. What would you say are your primary sources of information about nootropics?
9. Are there particular things that make you more or less likely to listen to someone when they're talking about nootropics?
10. There seems to be quite a bit of debate over what a nootropic actually *is*. What position do you take here?
11. About the sub itself - what do you think you get out of coming to, reading and participating in this sub?
12. I've noticed that there's a lot of contestation about the scientific evidence for the efficacy/risk/usefulness of a lot of nootropics. What are your thoughts on the state of the science?
13. How would you describe the relationship you have with doctors and the medical profession?
14. One of the key themes that I've noticed coming out of my research here and elsewhere is that a lot of people engage in self-experimentation as a means of exploring their individual responses to particular substances or regimens. Do you have any experience with this?

Figure 8 - interview schedule for r/nootropics participants

Appendix 2: Glossary

Word	Definition
API	Application Programming Interface. A set of subroutine definitions, communication protocols, and tools for building software. Social media platforms vary in how open their API is to users, with Facebook representing an increasingly <i>closed</i> system and reddit exemplifying a more <i>open</i> system, allowing users to programme bots, scrape data, and so on.
AHA	American Heart Association. Body of medical professionals which provides guidelines related to cardiovascular health.
Banting	An LCHF diet named after William Banting, a British undertaker who live in the 1800s. Considered by some to be the original LCHF diet, it originated from Banting's 'Letter on Corpulence', which ascribed almost miraculous weight-loss results to a diet consisting of high levels of protein and fat (and alcohol), with very few carbohydrates. Banting has seen a revival in South Africa in the 2010s due to the efforts of nutritional scientist Tim Noakes at the University of Cape Town.
Circle Jerk	Phrase used to describe behaviour where multiple users engage in self-congratulation over their shared worldview and values. Used in the context of paleo or nootropics forums to refer to thread where users upvote each other for repeating well-worn axioms or tropes, e.g. insulting vegans in r/paleo or deriding modafinil/ritalin/Adderall users in r/nootropics.
CSS	Cascading Style Sheets. A language used for describing the presentation of a document written in a markup language like HTML. Can be used, for example, to insert custom labels next to usernames, or alter the background of all the pages in a certain section of a site.
CVD	Cardiovascular Disease.
Evolutionary Nutrition	Evolutionary Nutrition is one of the principles underpinning the paleo diet. It states that what is healthful for humans to consume is primarily governed by our genetic makeup. From there, the logic is that humans' primary evolutionary milieu was pre-agricultural, as the 'neolithic revolution' only occurred ~10,000 years ago, and humans have been around for much longer. Consequently, paleo proponents argue that in many instances we have not evolved to be best adapted to consume the kinds of foods that are consumed in neolithic societies, and these foods are in part responsible for 'diseases of civilisation': diabetes, various cancers, autoimmune diseases, and other chronic illnesses of various kinds. Whilst there are some instances of humans evolving relatively quickly (for example, the genetic adaptation that allows many Europeans to tolerate and digest milk during adulthood), the argument is that for the most part our health is optimised by using 'what was eaten before agriculture?' as a heuristic.

	This is characterised by paleo guru Mark Sisson as the question, ‘What Would Grok Do?’, where ‘Grok’ refers to an imagined paleolithic hunter-gatherer ancestor.
God Mode	Term deriving from video games, used to describe a mode in which the player is granted invulnerability and almost limitless power. Now used in the nootropics community to refer to experiences similar to mania, often derived from the consumption of stimulants such as Adderall or wakefulness promoters such as modafinil.
Keto	Ketogenic Diet. A low carb, high fat way of eating that usually aims at weight loss through inducing ketosis. Ketosis refers to a state of carbohydrate depletion, in which the body begins to use ketone bodies rather than glucose as its primary means of fuelling metabolic processes. The argument keto dieters make is that this speeds weight loss, as insulin (which promotes the retention of energy in cells, and hence weight maintenance or gain) is not released when carbohydrates are not consumed. Currently an extremely popular way of eating.
LCHF	Low Carbohydrate, High Fat. Refers to a way of eating where the adherent's macronutrient breakdown is strongly skewed towards fats, with proteins constituting around 30% of the diet, fats 60-65%, and carbohydrates 5-10%. One stated logic for this way of eating is that fat loss can be facilitated by preventing the release of insulin (a growth-promoting hormone which causes cells to store more energy), which is possible if carbohydrate consumption is restricted. Paleo is not necessarily an LCHF diet, but it can be made to be low carb if the adherent so desires.
Limitless	2011 movie and 2015 TV series credited with popularising nootropics as a concept in the mainstream. Revolves around a drug, NZT-48, which gives the user superhuman cognitive powers when taken, ostensibly by unlocking their brain's full potential.
MOA	Mechanism of action. The means and pathway through which a drug works in the body.
Modafinil	Wakefulness promoting drug prescribed for treatment of narcolepsy. Commonly used as a cognitive enhancer or nootropic. Looked down upon by some within the nootropics community as a drug with an unsustainable side effect profile and irritating userbase. Modafinil posts in r/nootropics are commonly deleted or moved to r/afinil, a sister subreddit with a much smaller subscriber base, on the basis that they otherwise clog up r/nootropics and degrade the quality of the community.
n of 1	Also known as ‘self-experimentation’, an ‘n of 1’ experiment is an epistemic regime under which individuals gain knowledge about themselves and their bodies by changing some aspect of their life and monitoring their response. The term is commonly used in r/nootropics and r/paleo, and is also found in bodyhacking, neurohacking, self-tracking, and Quantified Self communities.
Nocebo	The opposite of the placebo effect: experiencing negative side effects due to the belief that one will experience them.

Nootropic	<p>A contested term which broadly refers to substances that are taken in an attempt to improve cognition. For some, they're specifically 'drugs or herbal supplements containing psychoactive chemicals that aid cognition' (Interviewee AA), and they exclude stimulants like methylphenidate (ritalin) and amphetamine (Adderall) due to their side effects and lack of effect on mechanisms that nootropics-enthusiasts consider to be necessary conditions for a drug to hold nootropic status. For others, often outside the nootropics community itself, the term refers almost exclusively to 'smart drugs' like ritalin and Adderall, influenced by popular culture portrayals of nootropics. In particular, the film and later series <i>Limitless</i> centres around a drug called NZT-48, which gives users superhuman cognitive abilities.</p> <p>The broader definition of nootropics, which includes both self-experimentation enthusiasts and users who consume modafinil or other prescription drugs, would include any substance from which can be derived a neurological or cognitive benefit. Even this may be too narrow, as the r/nootropics FAQ refers to exercise, sleep, and dietary intake as potentially nootropic. r/nootropics topics often also concern substances whose primary effects are psychedelic (such as LSD or magic mushrooms) or restorative (such as kratom, a herbal alternative to opioids). Consequently, the term should be considered a boundary object that moves between different categories and definitions for different groups of people with different interests, understandings, and values.</p>
np	No Participation. A kind of link used on reddit which disables the voting functions on the page it directs to in order to discourage brigading and similar behaviours.
NZT-48	Drug from <i>Limitless</i> which gives users superhuman cognitive powers at the cost of death if use is discontinued. Often analogised to real-life prescription drug modafinil (provigil), a wakefulness promoter prescribed for narcolepsy but commonly used off-label as a cognitive enhancer or nootropic.
OP	Original Poster. The user who initiated a thread to which other users are responding.
Paleo	Paleolithic Diet. A way of eating, variants of which are known as 'ancestral', 'primal', 'primitivist', or 'hunter-gatherer' diets. Governed by the principle of 'evolutionary nutrition', which states that human genetics are the primary arbiter of what kinds of food are healthful to consume, and that humans primarily evolved in a pre-agricultural setting, so consequently most people should take in food that attempts to emulate the type of food consumed before mass agriculture.
r/afinil	Sister subreddit to r/nootropics, created as an overflow for the large number of modafinil/armodafinil/adrafinil-related posts submitted to r/nootropics.
r/depressionregimens	Subreddit related to r/nootropics, with significant user crossover. Dedicated as a space for users suffering from depression and related mental health conditions to find drug and supplement regimes which help them to treat their condition.

Stack	A combination of multiple nootropic substances, usually taken with the aim of enhancing various facets of cognition. A classic example is caffeine and L-theanine (the active ingredient in green tea), which is used to improve alertness without the anxiety or restlessness that typically characterises a pure caffeine high.
Thrifty Gene Theory	Theory presented as a neo-Darwinian explanation for health and body weight, stating that feast-or-famine conditions during human evolutionary development naturally selected for people who could store excess energy as body fat for later use (Knight, 2011).
YMMV	Your mileage may vary.

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