Abstract

The Inheritance of Loss by Kiran Desai (2006) was critically lauded, gaining many positive periodical reviews and winning both the Man Booker Prize and the National Book Critics Circle Award for Fiction. However, it has received mixed reviews from customers of the online retail giant, Amazon: an arguable expression of the challenge that digital consumerism presents to literature’s longstanding claim to autonomy from the market. In order to understand the relationship between the book’s professional and customer reviews, a collection comprising both was constructed. Qualitative analysis of these reviews was followed by the use of thematic coding to compare sub-collections divided by means of publication and by geographical location, with social network graphs being used to represent similarities between reviews and graph density being employed as a measure of overall similarity. No distinctions were found between reviews when grouped according to geographical location. However, the novel’s professionally published reviews were found to be a more homogeneous group than its Amazon customer reviews, and to be more likely to recommend the novel and to praise it for its humour and its narrative, while customer reviews were found to be more likely to criticise it for its characters, and less likely to quote it or to discuss its political themes. It is argued that this is because the book was produced to satisfy the expectations of a ‘literary’ rather than a ‘popular’ audience, where professional book reviewers represent the former almost by definition.
Keywords
Amazon, autonomy, book reviews, Kiran Desai, evaluation, The Inheritance of Loss, online reviews, readers, reception, thematic analysis

1. Introduction
Amazon is the world’s largest online retailer – perhaps the only one large enough to provide significant competition to conventional hypermarket chains (O’Connor, 2013). It began as a bookstore, and, since 2007, has sold a range of e-readers and tablets under its market-leading Kindle brand: devices designed to capture sales traffic for Amazon’s Kindle Store (and provide access to value-added services such as Kindle Popular Highlights; see Rowberry, 2016). In the UK, Amazon handles approximately 95% of digital book sales, which in turn account for roughly 30% of the total book market (Farrington, 2015). In the US, it controls roughly two thirds of the e-books market and about the same proportion of the online market for printed books (Gessen, 2014). Moreover, through its Kindle Direct programme, Amazon has effectively become a trade publisher, maximising profits by characterising the arrangement it offers authors as one of ‘self-publishing’ and thus bypassing key functions of a traditional publisher, such as quality control, editorial services, design, marketing, and payment of advances against future royalties (which is to say that Kindle authors are ‘self-published’ by the same logic that Uber drivers are ‘self-employed’; c.f. Russon, 2016). A crowdsourced form of quality control is, however, made available post-publication, through facilitation of what has been described as a new genre of literary criticism (Domsch, 2009). While Amazon originally employed salaried staff to review books it sold – much as conventional bookshop staff provide recommendations to customers – it now relies on customers to contribute reviews without compensation, and, as Finn puts it, ‘implicitly endorses this kind of self-expression as a form of literary evaluation just as useful as the other data presented on each book’s page’ (2012: 193). This is a familiar Web 2.0 business strategy, whereby creation of intellectual property from whose publication an internet corporation will profit – so-called ‘content’ – is outsourced to an unpaid ‘community’ (see Shullenberger, 2014 on the ‘voluntariat’). Writing reviews for publication through Amazon’s website has thus developed as a characteristic literacy practice of the internet era: technologically mediated, commercially facilitated, and engaged in by countless individuals, some of whom publish thousands of reviews. Such reviewing is a literacy practice, but no longer a specifically literary practice: from pet supplies to power tools, all products Amazon retails may now be reviewed by customers, and many other retailers have imitated Amazon’s approach, such that an estimated £23 billion of annual consumer spending in the UK is now influenced by reviews published online (CMA, 2015: 3). However, it has a special significance as part of Amazon’s digital alternative to the infrastructure of contemporary literature, including bookshops, publishers, and review-carrying periodicals.

While many of Amazon’s business practices have been subject to public critique (see e.g. Miller (2014) on terms offered to publishers; Kantor and Streitfeld (2015) on treatment of employees; and Ingram (2015) on tax avoidance), its reviewing facility is generally regarded positively. This is unsurprising: as Morozov observes, discussion of the internet has been shaped by ‘a populist account of how technology empowers the people, who, oppressed by years of authoritarian rule, will inevitably rebel, mobilizing themselves through text messages, Facebook, Twitter, and whatever
new tool comes along next year’: a story that ‘the people’ (i.e. users of such technologies) ‘really liked to hear’ (2011: xiv, emphasis in original). Although Morozov’s focus is on democratic movements in authoritarian states, the same discourse is more metaphorically mobilised in relation to cultural institutions within liberal democracies (e.g. both of the internet reading groups studied by Thomas and Round, 2016: 244, 248 present themselves using the language of democratic revolution, with one declaring itself a ‘republic’ and the other calling upon ‘comrades’ to storm the ‘ivory towers’). The Amazon website can be presented in these terms because it appears to permit the customer to supplant not only the retail professional who recommends books to other customers, but also the professional reviewer who stands in public judgement over the most famous authors of the day: a supplanting easily cast as a popular uprising. So when, in drawing a line between ‘those who see web-reviewing’ by Amazon customers ‘as a “power to the reader” trend – the democratisation of something traditionally monopolised by literary mandarins’ and ‘those who see it as the degradation of literary taste’, John Sutherland took a rare stand against reviewing practices on the website (2006: n.p.), he somewhat inevitably earned himself the enmity of the blogosphere and Susan Hill (see Cooke, 2006).

From a literary point of view, the replacement of the critic by the customer may seem less a revolution than a counter-revolution. Literature’s relative autonomy from the market became historically possible through production for an audience of cultural producers such as Sutherland – and, indeed, Hill. As Bourdieu observes, the drive for autonomy was initiated in the early 19th century, when ‘literary society isolated itself in an aura of indifference and rejection towards the buying and reading public, i.e. towards the “bourgeois”’, and in this way began to secure for the field of literature the ‘power to define its own criteria for the production and evaluation of its products’ (1993a: 115).1 Twentieth century modernism was supported by distinctive institutions that permitted it to maintain a distance from the market (Rainey, 1998), and as Goldstone (2013) demonstrates, the idea of aesthetic autonomy was embedded not only in those social and commercial structures, but also in the very form of key modernist texts. Today, that idea seems less credible than it once did, for reasons both practical – especially the co-option of the arts into a largely instrumental cultural policy agenda (Belfiore, 2012) – and theoretical – in particular, sustained sociological focus on ‘culture’s relative heteronomy to processes of stratification, exclusion, marginalisation, and exploitation’ (Goldstone, 2015: 14). But even the most apparently compromised writers, such as literary consultants to property developers, cleave to ideas of autonomy: as Brouillette observes, ‘[e]ven if their autonomy is imagined... faith in it informs how [they] engage with and understand the projects to which they are aligned’ (2014: 155). Despite everything, the idea that an unpopular text may be in some sense better than a bestseller thus remains key – but it is hard to see how it could survive the cession of critical authority to the customers of a near-monopolistic online retailer. Literature-as-institution does not particularly want to be democratised by an e-commerce website.

Given the challenge that Amazon apparently presents to conventional reviewing, it is worth enquiring as to how different its reviews are from those published in periodicals. It has been argued that, thanks to online reviewing, ‘internet users now have access to a multitude of different perspectives about a wider number of products and services than was ever previously possible’ (Vásquez, 2015: 6). But where a product has been reviewed both conventionally and on a website such as Amazon, it is unclear how different the reviews should be expected to be. Although the anarchic early days of the web led to expectations of a revolution in areas such as journalism (see
e.g. Gillmor, 2004), it seems today that ‘new media content may in fact look very much like its traditional predece-s-sors’ (Hayes, 2013: 200), in part because amateur journalism is so often derivative of professional work (Reese et al., 2007: 235). However, one analysis finds ‘online citizen journalism content [to be] slightly more diverse than online newspaper content’ (Carpenter, 2010: 1075). In that professional reviewing is a form of journalism, we might thus expect customer reviews to follow the lead of the professionals, whilst exhibiting possibly greater diversity. On the other hand, in that professional reviewers are part of the field of literature while Amazon customers may not be, it is possible that they may diverge widely in their judgements. Finally, it is also possible that the importance of the customer/professional dichotomy has been overstated and that a more conventional demographic variable such as geographical location may have more impact on reader response.

To investigate further, this article uses thematic analysis to compare Amazon reviews of Kiran Desai’s 2006 novel The Inheritance of Loss with conventionally published reviews of the same book, and at the same time to compare customer and professional reviews originating in the same nation states with those originating in others.

2. Amazon customer reviewing and the field of literature

Book reviewing in newspapers and magazines typically requires possession of relatively exclusive qualifications – for example, authorship of conventionally published books – while the only qualification for publication as an Amazon customer reviewer is possession of an Amazon customer profile. Customer reviewing is therefore accessible to many who would not otherwise have the opportunity to review books in public: hence Hill’s assertion, contra Sutherland, that ‘the tide has turned and the people have power now’ (quoted in Lea, 2006: n.p.). But the difference between Amazon reviews and conventionally published criticism boils down to more than an assumption that one is produced by ‘the people’ and the other by a group apart. Professional and customer reviews have a materially different relationship to the cultural industries: in being paid to write a review for a newspaper or magazine, one acts as a supplier to a manufacturer; in posting a review on the Amazon website, one acts as a customer of a retailer.

Moreover, paid reviewing often falls to published authors whose works suggest affinity with the author being reviewed. The data analysed in this article included many examples of this practice, with Desai’s novel repeatedly being assigned to literary authors (especially those of Indian origin). Indeed, when The Times assigned a non-literary author to review The Inheritance of Loss, she began with the self-effacing admission that she ‘shouldn’t be reviewing’ the book as it was ‘far too good for the likes of [her]’ (Saunders, 2006: 11). Such apparent modesty would be out of place on Amazon: just as the practice of blogging is built upon the principle that ‘everyone has the right to be heard’ (Myers, 2010: 146), the practice of customer reviewing is built upon the principle that every customer has the right to be heard by other potential customers. And while customer reviewers may feel less bound by the rules of the cultural industries, that does not mean they have no influence on them in turn: as Sutherland writes, ‘[b]ookbuyers, commercial and individual, consult Amazon to see which way the wind is blowing. Many more than consult, say, the [Times Literary Supplement]’ (2006: n.p.).
Online customer reviews of products and services have received a certain amount of academic attention, especially in business studies (see Vásquez, 2015: 6 for a review). But online book reviews are of special theoretical interest because they represent a form of non-elite reception. This has been an important focus for studies of Amazon customer reviews of novels. Steiner (2008) explores their diversity by qualitatively contrasting customer reviews of a notably ‘literary’ novel – the Booker-shortlisted Atonement, by Ian McEwan (2001) – with those of chick-lit novels, especially The Wonder Spot by Melissa Bank (2005). In the chick-lit reviews, reading is presented as an entertaining activity similar to ‘watching films or TV’, with professional reviews being ‘frequently dismissed, sometimes even ridiculed, as elitist and ignorant about the genre’ and good chick-lit novels being defined as ‘fun, witty, easy and light reads’ that deal with ‘real issues’, enable the reader ‘to sympathise with the main character’, are ‘engaging’, and can potentially ‘change the reader’s life’ (2008: n.p.). Where chick-lit was criticised, it was for failing to meet these criteria and instead furnishing the reader with a ‘depressing’ or ‘boring’ experience (Steiner, 2008: n.p.). By contrast, the reviewers of Atonement appear to ‘borrow from academic discourse’ by:

...claim[ing] that the book’s value is derived directly from the qualities of the text and the author’s skillful prose... [and by] predominantly ground[ing positive comments] in criteria that a student or scholar of literature would use, to the degree that one may suspect that many of these reviewers have taken university courses in literature. (Steiner, 2008: n.p.)

In his reception study of Tim LaHaye and Jerry B. Jenkins’s Evangelical Christian bestseller Left Behind (1995) and its sequels, Gutjahr (2002) does not attempt a direct contrast with more professional or academic perspectives. However, he wryly comments that ‘[w]hile scholars of the Left Behind phenomenon often find it hard to get through the books in order to analyse them, the books themselves continue to sell in the millions’ (2002: 218). His analysis of 1700 mostly positive Amazon customer reviews identifies three emergent ‘themes’ (see section 4.1 below), two of which relate to characteristics of the novel, the most common being ‘just how engaging and fast-moving the plot was’ (Gutjahr, 2002: 222), and the second most common being praise for the book as an exercise in biblical exegesis (223). Male respondents to Gutjahr’s follow-up survey additionally explained their liking for the book in terms of its ‘emphasis on action over relational issues in the plot’ and their positive feelings towards its heroic male characters (2002: 221).

From Gutjahr and Steiner’s work, we gain a sense of a ‘popular’ aesthetic sensibility, oriented to by some Amazon customers, in which books are valued for providing the reader with an entertaining reading experience with likeable characters and exciting events that relate to ‘real’ issues. This ‘popular’ sensibility is also familiar from research on reading groups or book clubs, whose members, as Long observes in the classic study, generally avoid engaging in structural, stylistic, or symbolic analysis, instead discussing novels as representations of reality, primarily focusing on the characters and on ‘whether they like or dislike, admire or despise them, rather than... on how or why authors may have constructed [them]’ (1986: 606). It contrasts with a ‘literary’ aesthetic sensibility, oriented to by other Amazon customers and by the academics with whom they are implicitly aligned, in which books are valued for the finesse with which they are judged to have been composed. The opposition between the two resonates with Bourdieu’s argu-ment that ‘affirmation of the primacy... of the
mode of representation over the object of representation’ is the key characteristic of ‘cultural legitimacy regarding both the pro-duction and the reception of an art-work’ (1993a [1985]: 117).

3. The Inheritance of Loss and the field of cultural production

The Inheritance of Loss (2006) was a critical success. It won the most prestigious British award for literature and one of the three most prestigious literary prizes in the US, as well as receiving glowing reviews in English-language periodicals across Asia and large parts of the Anglophone world (see Allington, 2014a). While a detailed analysis cannot be attempted here, Desai appears to have written at least partly in response to critics in her home country who argued that her first novel had exoticised India (Sadana, 2012: 162). This may explain the book’s central concern with dramatising similarities and historical connections between India and the West. The Inheritance of Loss depicts a racist and exploitative India in which aspiration largely consists in looking towards Britain and America, and a racist and exploitative Britain and America in which immigrants suffer invisibly and ignore or exacerbate one another’s plight. The narrative switches between three main stories: the decolonisation of India as remembered by a misanthropic judge; the Ghorkhaland uprising as experienced by members of the judge’s English-speaking social circle; and the judge’s servant’s son’s attempts to make a living in Manhattan. The prose is conspicuously beautiful in its descriptions of natural phenomena, and bleakly comical in its depictions of squalor and humiliation. All told, the book possesses characteristics more typical of a ‘serious’, ‘literary’, or culturally ‘legitimate’ book than of a work of ‘popular fiction’.

As Bourdieu (1993b [1980]) observes, novels are distinguished from unique artworks such as paintings by dependence upon sales to an audience beyond the ‘field of cultural production’ and its elite clients. In the case of ‘literary’ novels, often written to frustrate the expectations of a popular audience, such sales can be achieved through the intermediary agency of educational institutions in the long term (Bourdieu, 1993b: 97–101) and of cultural prizes in the shorter term (see English, 2005). This process places such books in the hands of readers not guaranteed to align themselves with the values of the field. For example, Long (2003) finds that, while reading groups or book clubs tend to read the kinds of books that cultural authorities would recommend, they do not necessarily discuss them reverently, nor evaluate them positively. This may explain why The Inheritance of Loss attracted Amazon customer reviews as divergent as the following, which appeared on two consecutive days:

The issues of power & corruption, truth & lies, beauty, poverty, class, love and betrayal, not to mention the imbalance between the so-called Third World and the West, and yet it never becomes ‘heavy’, all of which combine to make this book a literary classic and all-time great novel, in my opinion.

There are moments of very high comedy and farce underpinned by tragedy and desolation, and yet Desai never once oversteps the mark. Her characters are real and one finds oneself caring very deeply about them and what happens to them. Congratulations, Kiran, it fully deserves this year’s Booker Prize. (Bibliophile, 2007: n.p.)
In my experience the Booker and Whitbread/Costa winners are picked by pretentious literati, who are easily conned by flowery prose and grandiose aims... It seems enough here that a pretty woman wrote a book about India and immigration – never mind if it isn’t any good. Ditto for Zadie Smith.

...Somewhere, in the seven years it took her to write it, someone should have cuffed Desai around the back of the head screaming ‘plot! characters! development! structure!’ and other features of any basic creative writing course. (bloodsimple, 2007: n.p.)

The first praises specific formal features of the book, approvingly draws attention to its political and personal themes, and endorses the Man Booker judging panel’s decision; the second criticises specific formal features of the book, dismisses one of its political themes, and ridicules the panels of two literary prizes. It also belittles both Desai and another female, nonwhite, prizewinning author by suggesting that their only merit is sexual attractiveness, and asserts that Desai deserves corporal punishment (parallels can be drawn with the threats to which female journalists are routinely subjected online; see Mijatovic, 2015). Notably, the second reviewer also rejects the privileging of prose style that has been the key characteristic of ‘highbrow’ or ‘legitimate’ taste in literature since the early 20th century (Verdaasdonk et al., 2001: 382), and insists on the importance of plot and character, the privileging of which over prose is characteristic of writers and readers of popular fiction (see Allington, 2011).

4. Methodology

4.1 Thematic analysis

Instructive though it is to quote reviews at length and read them closely, this article’s concern is to identify patterns in larger numbers of reviews through thematic analysis. Thematic analysis is a type of content analysis that emphasises latent content, i.e. aspects of data requiring a notable degree of interpretation, over manifest content, i.e. aspects of data that can be identified more mechanically (for example, the word frequencies analysed in Pihlaja’s, 2016a study of online responses to pornographic videos). As Braun and Clarke observe, thematic analysis is so ubiquitous in the social sciences that, often, ‘analysis is essentially thematic, but is either claimed as something else... or not identified as any particular method at all’ (2006: 80). Thematic analysis is often qualitative, but as Boyatzis (1998) emphasises, it transforms qualitative data into a representation suitable for quantitative analysis. As with other forms of content analysis, this involves (in the words of a pioneer of the approach) ‘applying a quantitative measure under relatively stable conditions so that another researcher would tend to get similar results using these same methods’ (McLeod, 1953: 5).

The first stage is ‘coding’: recognising and labelling salient chunks of data. The size and nature of the chunk – or, to give it its technical name, the ‘unit of coding’ – depends upon the project. Coding differs from processes such as annotation, markup, and tagging in that its purpose is to create an abstract representation of data, in order that the researcher may reason about the data by reasoning about the representation. Codes are developed and modified throughout analysis, with the aim being not merely to apply a given set of labels to the data but to develop a set of labels
capable of representing what is interesting about the data. For this reason, coding is ideally done by
the same person who will work with the coded representation, and tests of inter-rater reliability are
neither standard nor (in many cases) possible (e.g. in the current paper, whose author was the sole
researcher). It is an interpretative process, but it explicitly operationalises interpretative decision-
making.

Besides Gutjahr’s (2002) research (discussed above), there have been many thematic analyses in
reader and reception study. In Morley’s (1999 [1980]) ground-breaking study, statements made by
focus groups were classified according to whether they accepted, rejected, or ‘negotiated’ (see Hall,
1980) a current affairs broadcast’s interpretation of events. For years, Morley’s findings were taken
to have been inconclusive, but Kim’s re-analysis of the coding suggests on the contrary that
‘audience’s social positions... structure their understandings and evaluations of television
programmes in quite consist-ent directions and patterns’ (2004: 103). Other examples include
Hermes’s (1995) study of ‘repertoires’ (see Potter and Wetherell, 1987) in discourse on reading
women’s maga-zines, Fowler’s (2000) analysis of aesthetic standpoints appealed to in public
responses to Salman Rushdie’s The Satanic Verses (1988), and Kuiken and Miall’s (2001) proce-dure
for identifying and enumerating meaningful categories within narratives about reading experiences.
In more recent studies, Swann and Allington (2009) investigate how particular aspects of novels
became topicalised in booktalk, Mackay and Tong (2011) identify the frequency of different forms of
interaction in responses to BBC World Service stories, and Corneau and van der Meulen (2014)
identify the informal generic categories into which gay consumers divide pornography for purposes
of discussion (e.g. ‘mellow’, ‘amateur’, and ‘bareback’).

4.2 Data collection

The first 12 months of customer reviews were downloaded from each of the Amazon. com,
Amazon.ca, and Amazon.co.uk webpages (these being the main Amazon sites for the Anglophone
world at the time of publication). From the earliest 350 articles retrieved by NexisUK for the search
terms ‘Inheritance of Loss’ and ‘Desai’, all reviews of the book were selected by hand, as well as all
articles including evaluative discussion of the novel. Where reviews were republished, the longest
version was used. This yielded a collection of 112 reviews, including 65 from Amazon and 47 from
periodicals. Where professional reviews covered multiple books, sentences not dealing with The
Inheritance of Loss were ignored. In professionally published articles containing non-review text (e.g.
news), only the ‘review-like’ sentences (i.e. those attributable to someone other than Desai and
concerned with the evaluation, interpretation, categorisation, or description of The Inheritance of
Loss) were taken account of. No private data were collected.

Table 1. Possible values for categorical variables.

+ Positively evaluated or used in support of a positive evaluation.

− Negatively evaluated or used in support of a negative evaluation.

± Ambivalently evaluated.

= Mentioned without evaluation.
4.3 Code development

Reading across both professionally published and customer reviews of The Inheritance of Loss yielded the impression of notable continuities and oppositions. Professional reviews were overwhelmingly positive, while customer reviews were more balanced between those that liked and those that disliked the book. Positive and negative reviews often orientated to ‘the same’ formal features. For example, if we return to the two customer reviews examined in section 3, one praises the book because ‘[Desai’s] characters are real and one finds oneself caring very deeply about them’, while the other suggests that ‘characters’ are one of the ‘features of any basic creative writing course’ to be missing from the book. Similarly, some reviewers praised the book’s non-linear structure, while others found it confusing or frustrating.

The coding scheme was developed in order to formalise this insight. Successive schemes were applied to subsets of the data in a process of iterative refinement: codes that could be applied to very few reviews or that would have to be applied to almost all of them were dropped, while others were merged if distinctions proved difficult to sustain.

With the exception of the code concerning overall evaluation (which sometimes relied on a holistic judgement), all codes were assigned strictly in relation to explicit statements. Insistence on the need for an explicit statement made certain distinctions problematic. For example, it would have been interesting to distinguish references to the likeability of characters as imaginary people from references to the artfulness with which they were represented. However, it was often difficult or impossible to determine which of these was intended.

4.4 Coding scheme

The unit of coding was the review, so the coding scheme consisted of variables describing characteristics of the reviews. The finished version consisted of 16 variables (see Table 2). These comprised seven binary variables, six categorical variables, and three free text variables (two of which were not used in subsequent analysis). Six variables described evaluations of the book. The first was a binary variable indicating whether the review was recommending the book, or was positive about it overall. The remaining five were categorical, covering evaluations of (a) character (whether with regard to like-ability or authorial artfulness), (b) narrative (whether with regard to fictional events or to their representation), (c) prose, (d) humour, and (e) representation of India. Table 1 shows the possible values.

Four binary variables covered ‘political’ themes mentioned in many reviews. Two related to general issues raised by the novel: one covering colonialism and globalisation, and one economic inequality. The other two were more specific, relating to sociohistorical realities represented in the novel: the conditions faced by poor and/or illegal economic migrants to the US, and the Ghorkaland uprising in Darjeeling. A further binary variable was used to record whether the text of the novel was quoted.
Two variables were used to categorise the review itself. The first was a binary variable indicating whether it was a published in a periodical or on the Amazon website. The second was a free text variable, used to record geographical information.

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Table 2. Coding scheme.

<table>
<thead>
<tr>
<th>Variable Possible Explanation and examples values</th>
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<tbody>
<tr>
<td>Binary variables relating to the review as a whole</td>
</tr>
<tr>
<td>Recommendation 0, 1 Is the reviewer recommending the book? An overall assessment based on the review as a whole.</td>
</tr>
<tr>
<td>Categorical variables relating to formal features of novels in general</td>
</tr>
<tr>
<td>Character +, –, ±, =, 0 Characters and characterisation. = for an explanation of who some of the characters are (beyond mentioning names). – or + may indicate evaluation of the characters as imaginary people (e.g. ‘hypocritical, unsuccessful, frustrated and devoid of personal hygiene’ was coded –) or of the way they are represented (e.g. ‘one dimensional’ was coded –). Often, there was no way to be sure whether the former or the latter was intended (e.g. in ‘It is impossible not to feel deeply for the characters’, which was coded +).</td>
</tr>
<tr>
<td>Narrative +, –, ±, =, 0 Narrative, in the sense of sjuzhet and/or fabula (see Shklovsky, 1965 [1921]). = for a plot recount, which minimally consists of a mention either of a change of some kind or of two or more events in sequence. – for complaining that there is no plot, that nothing happens, that the ending is bad, or that the narrative skips around too much or too abruptly, + for stating that the events of the novel are interesting or surprising, or for praising the non-chronological sequence in which they are narrated. Linking e.g. the alternations between New York and Kalimpong to a theme attributed to the novel (e.g. its representation of similarities between India and the US) constitutes + as this structures the narrative as successfully constructed to achieve this communicative end.</td>
</tr>
<tr>
<td>Prose +, –, ±, =, 0 The style of language use in the novel. Must refer to use of language, to description, etc., e.g. by calling the novel ‘lyrical’ or ‘poetic’ (both +) or ‘flowery’ (–), or refer to ‘writing’ (unless there is grounds for assuming that this word refers simply to the general activity of constructing a novel). ‘Well written’ is too ambiguous to constitute by itself a reference to prose, although ‘writes beautifully’ was accepted once because the warrant for this claim referred to ‘images’. ‘[G]ood writer’ was accepted once as + because this evaluation was contrasted with a negative judgement of the fabula (‘but the story reeks’).</td>
</tr>
</tbody>
</table>

Categorical variables relating to formal features identified as salient with regard to this novel
Humour +, −, ±, =, 0 Evaluation of the novel’s humorous, witty, or comedic aspects. Description of the book as funny or witty was coded +; complaint that something was ‘played for laughs’ was coded −.

Variable Possible Explanation and examples values
Representation of +, −, ±, =, 0 Representation of India. E.g. ‘This book has shown me a India very different side of life in India’ was coded +, while ‘it is clear that she does not connect with ordinary Hindus or their worlds very well’ was coded −.

Binary variables relating to characteristics of the review
Quotation 0,1 Does the review include an explicitly framed quotation from the novel?
Colonialism and 0,1 Mentions colonialism and/or globalisation. Includes globalisation references to the judge’s hatred of Indian culture if it is connected to his education in Britain (since this is one of the ways in which the novel dramatises the cultural consequences of colonialism).
US migration 0,1 Indicates that the novel concerns poor and/or illegal economic migrants (i.e not refugees, holidaymakers, or middle class professionals) in the US (i.e not elsewhere in the world).
Ghorkaland 0,1 Mentions the Ghorkaland uprising. Must (a) identify it as a political movement (using such words as uprising, insurgency, agitation, civil unrest, etc: just mentioning violence is not enough), and (b) historically locate it, either by using words such as ‘Ghorka’ or ‘Ghorkaland’ or by giving enough detail (time period, geographical location, ethnic group) so that someone who has read the review but not the book could infer that the book concerns this uprising and not some other uprising (e.g. elsewhere in India or the Himalayas).
Economic 0,1 Mentions economic inequality. Must mention class, inequality poverty, etc.: mention of caste not sufficient as no longer strictly economic. Discussion of the squalor of a character’s working conditions doesn’t count here, but that of a character’s living conditions does.

Variables to be used in classification of reviews
Publication customer, Is this an Amazon customer review or a professionally professional published review?
Location Free text Geographical location. For Amazon customer reviews: the nation state with which the reviewer publicly identified him- or herself. For professionally published reviews: the nation state in which the publication appeared.

4.5 Coding procedure
The unit of coding was the review. The author of this article was responsible for all coding. The following professional review is provided as an example:
A shell of his once imposing self, retired magistrate Patel retreats from society to live on what was previously a magnificent estate in India’s Himalayas. Cho Oyu is as far away from the real world as the embittered Patel can get. Owing to neglect and apathy, its once beautiful wooden floors are rotted, mice run about freely, and extreme cold permeates everything. The old man isn’t blind to the decay that surrounds him and in fact embraces it. But the outside world intrudes with the arrival of his young granddaughter – a girl he never even knew existed. Predictably, the relationship between the two builds throughout the narrative. A parallel story about love and loss is told through the voice of Patel’s cook. After the success of her debut, Hullabaloo in the Guava Orchard, Desai – the daughter of one of India’s most gifted writers, Anita Desai – falls short in her second attempt at fiction. She fails to get readers to connect and identify with the characters, much less care for them. The story lines don’t run together smoothly, and the switching between character narratives is very abrupt. Not recommended.

(Zemke, 2005: 63)

The first seven sentences comprise a non-evaluative plot recount and brief description of the setting and four of the characters, so it would have led to the review’s being coded + for narrative and character had it not been for the ninth and tenth sentences. These negatively evaluate both characterisation (‘fails to get readers to connect and identify with the characters, much less care for them’) and plot (‘story lines don’t run together smoothly, and the switching between character narratives is very abrupt’). The review explicitly declines to recommend the novel, but even without the final sentence, a negative overall evaluation is apparent from the statement in the eighth sentence that the author ‘falls short’. There is no mention of prose, humour, representation of India, colonialism and globalisation, US migration, the Ghorkhaland uprising, or economic inequality, and there is no quotation from its text, so the review was coded 0 for the corresponding variables.

It will be noted that the text of the above review is more carefully composed than either of the customer reviews quoted in section 3, and that it avoids any trace of the offensiveness characterising the one that shared its overall negative evaluation. Such evidence of professional writing standards tended to distinguish the periodical reviews from the customer reviews, but was not coded for as it did not relate to the interpretation and evaluation of Desai’s book.

4.6 Analysis

Figure 1. Similarities between reviews A, B, C, and D (invented data).

Table 3. Invented data.

<table>
<thead>
<tr>
<th>Prose Narrative Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review A + + +</td>
</tr>
<tr>
<td>Review B + + –</td>
</tr>
<tr>
<td>Review C + – –</td>
</tr>
<tr>
<td>Review D – – –</td>
</tr>
</tbody>
</table>

Once the reviews had been coded, groups of reviews could then be compared in terms of the number of times that particular variables were assigned particular values. Pearson’s χ² test was used
to test for significance (i.e. confidence that observed differences were not the result of chance). With regard to categorical variables, the test was applied to two-column contingency tables, with one column containing counts for a particular value (e.g. +) and the other containing combined counts for all other values (i.e. in this example case, 0, −, ±, and =).

This made it possible to compare groups of reviews one variable at a time. In order to compare groups of reviews in terms of overall similarity with regard to the values assigned to multiple variables, a form of social network analysis was employed. Social network analysis focuses on relationships (visualised as lines and referred to as edges) between entities (visualised as points or circles and referred to as nodes). It developed in the early 20th century and has become one of the most important forms of quantitative research in the social sciences (see Scott, 2000). While much work in social network analysis focuses (as one might expect) on social relationships such as friendship and sexual partnership (e.g. Crossley, 2008), co-residence (e.g. Bingenheimer et al., 2011), collaboration (e.g. Watson, 2012), and money-lending (e.g. Gondal and McLean, 2013), and in recent years it has been extensively used to map interactions taking place via online social networking services (e.g. Allington et al., 2015; Paolillo, 2008; van Zoonen et al., 2011), it is also possible to use it to study entirely conceptual relationships. For example, Finn (2012) represents authors as nodes that are connected if they are men- tioned in the same reviews, Jockers (2013: chapter 9) constructs a network in which nodes represent novels and edges represent points of stylometric and lexical similarity between them, two independent studies have represented musical genres with nodes that are connected to one another more or less strongly according to the frequency with which they co-occur in musicians’ self-classifications of their work (Allington, 2014b; Lee and Silver, 2014), and an experimental approach to quantitative text analysis has been developed in which lemmas are represented with nodes whose linkages reflect co-occurrence within the same sentences (Field et al., 2013).

In the network analysed in the current study, nodes represent reviews and an edge between nodes indicates that variables for the represented reviews were assigned at least some of the same values (i.e. that the reviews were found to have some level of similarity), with heavier edges indicating that larger numbers of variables were assigned the same values (i.e. that the reviews were found to have a greater level of similarity). To explain this, some invented data may be used. In Table 3, four reviews have been coded according to a simple coding scheme. Review A and review B have two values in common (for prose and narrative), as do reviews B and C (for prose and character) and C and D (for narrative and character), but review C has only one value in common with review A (for prose), review B has only one value in common with review D (for character), and review D has no values in common with review A. These relationships are visualised in Figure 1, which has ‘heavy’ edges (here represented by thicker, paler lines) between reviews A and B, reviews B and C, and reviews C and D, ‘light’ edges (here represented by thinner, darker lines) between reviews A and C and reviews B and D, and no edge between reviews A and D. As in all this article’s visualisations, the graph in Figure 1 was drawn using Python 2.7, NetworkX, and Matplotlib, and laid out using NetworkX’s implementation of the Fruchterman–Reingold algorithm, which aims to place directly connected nodes more closely together than unconnected nodes (Fruchterman and Reingold, 1991: 1131). It shows at a glance that reviews A and D were coded more divergently than any other pair of reviews.
Network graphs can be compared using measures of graph density. The more similarities there are between reviews, the more numerous and the heavier the edges will be. Graph density is a measure of how many edges there are in a graph compared to the number of edges there would be if every node in that graph were connected to every other node in the same graph, and (if allowance is made for edge weight) can therefore be used here as a measure of aggregate similarity between reviews. See Appendix for details.

5 Findings

5.1 Binary variables

Ninety-four percent of professional reviews, but just 58% of customer reviews, expressed an overall positive evaluation. Just as strikingly, quotations from the novel appeared in 55% of professional reviews but only 8% of customer reviews (see Verdaasdonk et al., 2001, who find that professional critics employ certain forms of quotation more frequently when reviewing authors of high literary status). The remaining four binary variables relating to characteristics of the review were conflated into a single binary variable: political theme. This had the value of 1 if at least one of the four variables was 1. Eighty-three percent of professionally published reviews but just 48% of customer reviews met this condition. As Table 4 shows, these sharp differences between professional and customer reviews are not matched by comparable differences when reviews are grouped by location. For the two nation states with the highest representation in the dataset, i.e. the US and the UK, values diverge by no more than 5% for any of the variables in the table. All three differences between periodical and Amazon reviews are significant at $p < 0.001$, while no differences between US and UK reviews approach significance even at $p < 0.05$ (the lowest level of significance accepted in this study). Although too few for meaningful comparison or for calculation of significance, Indian reviews are included here because of India’s importance for the book in question. While they diverge sharply from the US and the UK in Table 4, it should be noted that all five were professionally published and closely resemble other periodical reviews in their coding. The overall picture, then, is of little evidence for geographical divergence, but what would appear to be substantial divergence between professional and customer reviews on all three counts, albeit with a proportion of customer reviews (in the case of quotation, a particularly small proportion) found similar to the majority of professional reviews on each count.

Table 4. Binary variables.

<table>
<thead>
<tr>
<th>Total</th>
<th>Recommends</th>
<th>Quotes</th>
<th>Political theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periodical</td>
<td>Amazon</td>
<td>US</td>
<td>UK</td>
</tr>
<tr>
<td></td>
<td>47 64 37 37 5 111</td>
<td>44 37 25 26 5 81</td>
<td>94%</td>
</tr>
<tr>
<td></td>
<td>73%</td>
<td>26 5 8 4 31</td>
<td>55%</td>
</tr>
</tbody>
</table>

It is suggested that the novel’s very high proportion of recommendations from periodical reviews reflects its success when measured against the aesthetic criteria applied by professional reviewers to a work of ‘literary’ fiction, and that its significantly lower proportion of recommendations from customer reviews reflects the application of different criteria by many Amazon customers. The significantly higher incidence of quotation and of mention of political themes among professional reviews may reflect a greater emphasis on close reading and the discussion of what have been called
‘critical matters’ (Allington, 2012: 215), in particular the relationship between thematic meaning and fine textual detail.

5.2 Categorical variables

Table 5 shows how frequently the five categorical variables were assigned values other than 0 (i.e. how often the aspects of the novel in question were mentioned, evaluatively or otherwise). It reveals that reviews mentioned character most, followed by prose and narrative. Professional reviews mentioned these more frequently, although the difference is only statistically significant with regard to narrative, at $p < 0.05$. Humour was men- tioned in a bare majority of periodical reviews but in only about a fifth of customer reviews: a difference significant at $p < 0.001$. Representation of India was mentioned in more customer reviews than periodical reviews, though this was not statistically significant. Differences between the US and UK were statistically insignificant.

Table 5. Categorical variables: mentions.

<table>
<thead>
<tr>
<th>Total</th>
<th>Prose non-0</th>
<th>Character non-0</th>
<th>Narrative non-0</th>
<th>Comedy non-0</th>
<th>Rep. of India non-0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periodical Amazon US UK India All</td>
<td>47 64 37 37 5 111 32 38 22 24 4 70</td>
<td>68% 59% 59% 65% 80% 63%</td>
<td>44 53 32 33 5 97 94% 83% 86% 89% 100% 87%</td>
<td>36 35 23 24 3 71 77% 55% 62% 65% 60% 64%</td>
<td>24 12 11 12 4 36 51% 19% 30% 32% 80% 32% 9 20 12 7 2 29 19% 31% 32% 19% 40% 26%</td>
</tr>
<tr>
<td>Amazon US UK India All</td>
<td>64 31 48% 9 14% 18 28% 23 36% 15 23% 9 14% 15 23%</td>
<td>36 35 23 24 3 71 77% 55% 62% 65% 60% 64%</td>
<td>24 12 11 12 4 36 51% 19% 30% 32% 80% 32% 9 20 12 7 2 29 19% 31% 32% 19% 40% 26%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>US</td>
<td>37 18 49% 13 35% 6 16% 17 46% 8 22% 10 27% 9 24%</td>
<td>18 28% 23 36% 15 23% 9 14% 15 23%</td>
<td>36 35 23 24 3 71 77% 55% 62% 65% 60% 64%</td>
<td>24 12 11 12 4 36 51% 19% 30% 32% 80% 32% 9 20 12 7 2 29 19% 31% 32% 19% 40% 26%</td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>37 20 54% 2 5% 11 30% 11 30% 7 19% 10 27% 6 16%</td>
<td>23 36% 15 23% 9 14% 15 23%</td>
<td>77% 55% 62% 65% 60% 64%</td>
<td>24 12 11 12 4 36 51% 19% 30% 32% 80% 32% 9 20 12 7 2 29 19% 31% 32% 19% 40% 26%</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>5 4 80% 2 40% 0 0% 4 80% 0 0% 3 60% 2 40%</td>
<td>9 19% 18 38% 3 6% 22 47% 9</td>
<td>36 35 23 24 3 71 77% 55% 62% 65% 60% 64%</td>
<td>24 12 11 12 4 36 51% 19% 30% 32% 80% 32% 9 20 12 7 2 29 19% 31% 32% 19% 40% 26%</td>
<td></td>
</tr>
</tbody>
</table>

Table 6 shows all positive and negative values to be assigned to categorical variables in more than 10% of all reviews, as comparison on the basis of infrequently assigned values was considered more susceptible to error. Professional and customer reviews were more likely to praise the novel for its prose than for anything else, and about equally likely to praise it for its characters and for its representation of India. US reviews positively evaluated the narrative more often than UK reviews ($p < 0.01$), this being the only statistically significant difference to be found between the two nations. Once we remove the small number of Indian reviews from consideration (see subsection 5.1), the greatest discrepancy is between the 47% of professional reviews that praised the book for its humour and the mere 14% of customer reviews that did the same ($p < 0.001$).

Table 6. Categorical variables: evaluations.

<table>
<thead>
<tr>
<th>Total</th>
<th>Prose</th>
<th>Narrative</th>
<th>Character</th>
<th>Character</th>
<th>Comedy</th>
<th>Rep. of India</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periodical</td>
<td>47 30</td>
<td>64% 15</td>
<td>32% 6</td>
<td>13% 18</td>
<td>38% 3</td>
<td>6% 22</td>
</tr>
<tr>
<td>Amazon</td>
<td>64 31</td>
<td>48% 9</td>
<td>14% 18</td>
<td>28% 23</td>
<td>36% 15</td>
<td>23% 9</td>
</tr>
<tr>
<td>US</td>
<td>37 18</td>
<td>49% 13</td>
<td>35% 6</td>
<td>16% 17</td>
<td>46% 8</td>
<td>22% 10</td>
</tr>
<tr>
<td>UK</td>
<td>37 20</td>
<td>54% 2</td>
<td>5% 11</td>
<td>30% 11</td>
<td>30% 7</td>
<td>19% 10</td>
</tr>
<tr>
<td>India</td>
<td>5 4</td>
<td>80% 2</td>
<td>40% 0</td>
<td>0% 4</td>
<td>80% 0</td>
<td>0% 3</td>
</tr>
</tbody>
</table>
Professional reviews praised the narrative twice as frequently as customer reviews \((p < 0.05)\), and customer reviews criticised it twice as frequently as as professional reviews (although the overall numbers were too small for the finding to be statistically significant); moreover, proportionally nearly four times as many customer reviews as professional reviews criticised aspects of the book related to its characters \((p < 0.05)\). This could indicate different standards for plot and character: qualitative examination of reviews suggests that the book’s rarely admirable protagonists, fragmentary sjuzhet, and relatively uneventful fabula (all hallmarks of ‘literary’ writing) may have played better among professional reviewers than among Amazon customers. Other differences were statistically insignificant. Well over half of professional reviews, but slightly less than half of customer reviews, praised the book’s prose, and while all reviewers who were purely negative about the book’s prose were customers posting on Amazon’s US web-site, there were only four of them in total.

5.3 Aggregate similarity

Network analysis was used to investigate similarity of categorical variables, as described in subsection 4.5 and the Appendix. Binary variables were not used, as there is a far greater chance of two reviews being assigned the same value for a binary variable than for a categorical variable. Figure 2 is a visualisation of the resulting graph. Nodes are coloured by means of publication, with grey for customer reviews and white for professionally published reviews. Grey nodes are dispersed throughout the graph, but almost all white nodes are located in a single region (the exceptions are three negative reviews that are clustered together). Figure 3 visualises the same graph with the same layout, but coloured by location, with grey for the UK and white for the US (nodes representing reviews from outside these two countries were removed). There is no comparable pattern of distribution. This suggests that professional reviews may have more similarity to one another than customer reviews with regard to their orientations to specific formal features, while geographical location makes comparatively little difference.

Table 7 shows the densities, weighted densities, and normalised weighted densities (see Appendix) of four subgraphs: all professional reviews from the US and the UK, all customer reviews from the US and UK, all customer and professional reviews from the US, and all customer and professional reviews from the UK. The density and weighted density of the first of these far exceeds that of the others, and is more than double that of the second. As we see from the normalised weighted densities, this is a far greater discrepancy than can be explained by the slightly higher incidence of non-0 values for categorical variables assigned to periodical reviews (see subsection 5.2). In other words, it was not simply that the periodical reviews orientated to more aspects of the novel; they also oriented to the same aspects in the same ways in a higher proportion of cases.
Table 7. Graph density.

<table>
<thead>
<tr>
<th>Subgraph</th>
<th>Nodes</th>
<th>Density</th>
<th>Weighted density</th>
<th>Normalised density</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK/US periodical</td>
<td>26</td>
<td>0.93</td>
<td>0.20</td>
<td>0.33</td>
</tr>
<tr>
<td>UK/US Amazon</td>
<td>48</td>
<td>0.53</td>
<td>0.10</td>
<td>0.19</td>
</tr>
<tr>
<td>UK</td>
<td>37</td>
<td>0.70</td>
<td>0.12</td>
<td>0.23</td>
</tr>
<tr>
<td>US</td>
<td>37</td>
<td>0.58</td>
<td>0.12</td>
<td>0.23</td>
</tr>
</tbody>
</table>

There is some difference between the unweighted densities of the UK and US graphs, but this apparent contrast disappears when the calculation of density is weighted and normalised. The important distinction therefore appears to be between a relatively homogeneous collection of professionally published reviews and a relatively heterogeneous collection of customer reviews. However, nearly 23% of customer reviews were found to be at least as similar to periodical reviews as 50% of periodical reviews were to other periodical reviews. This means that a substantial minority of customer reviews appeared very similar to periodical reviews from the point of view of the coding scheme employed in this study.

6 Conclusions

As one journalist observed with regard to the Sutherland/Hill spat, ‘[t]he question... [of] what effect... the internet [is] having on criticism... is not only fair; it is one that no one who cares about art, and especially writing, can ignore’ (Cooke, 2006: n.p.). This article can present several findings with a bearing on that question. At least some customer reviewers appeared to follow the lead of professional critics in at least some respects. But there were many differences between the collections of professional and customer reviews. Reviews published in conventional periodicals discussed the political issues that the book raised more frequently – and quoted it far more frequently – than reviews published on the Amazon website, suggesting that close reading of the type taught in undergraduate literature courses may be comparatively rare in customer reviews. Moreover, there was evidence of different evaluative standards being employed. Nearly half of professional reviews, but less than one in seven customer reviews, praised the book for its humour. Customer reviews were less likely than professional reviews to praise the book for its narrative, more likely to complain about the book’s characters, and much less likely to recommend the book overall. Grouping by geographical location produced almost no comparable discrepancies, suggesting that where a reviewer is located in the (Anglophone) world is less significant than where he or she is positioned in relation to the (Anglophone) cultural industries. Periodical reviews also appeared more homogeneous than customer reviews in their orientations to the book’s formal features.

As Nagle notes, the rise of online commentary has been presented as a ‘leaderless revolution against a cultural elite of writers and editors’, though it can also be seen as ‘an expression of hegemonic
thought in an age... in which... everyone must have their say while, in material terms, the
centration of power continues to get smaller and smaller” (2015: n.p.). If Amazon customer
reviews are as influential as some have sug-gested, this equates to a transference of power from a
range of companies (i.e. conven-tional periodicals and their publishers) to a single company (i.e.
Amazon itself). But when customers ‘have their say’, it appears that some echo the ‘cultural elite’ of
profes-sional critics more closely than others. A well-publicised, award-winning novel can potentially
reach a wide audience, including some who are inclined to evaluate it in relation to the same criteria
as the audience for which it was written and others whose expectations of a ‘good read’ may be
somewhat different. Amazon collects reviews from both in a single space, on the assumption that all
customers’ opinions are equiva-lent. Which, from the point of view of a retailer dealing in everything
from groceries to sports equipment, they very possibly are.

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article.

Notes

1. In Bourdieu’s sociology, society is conceived ‘as... differentiated into a number of semi-autonomous
fields... governed by their own “rules of the game”’ (Benson, 1999: 464). A field comprises the state
of relations between all agents involved in a particular sphere of activity. In the case of the field of
literature, that activity is the production of literature (which includes the production of its value
through gatekeeping, marketing, criticism, etc). Bourdieu used terms such as ‘the field of art and
literature’ and ‘the field of restricted pro-duction’ to indicate overlap between the production of
literature and the production of other ‘highbrow’ cultural forms in the less commercially orientated
segments of the media and cultural industries.

2. Hill’s blog has since been deleted.

3. See Pihlaja (2016b) and Rowberry (2016) on practices of quotation in other online fora. Pihlaja in
particular finds evidence of close and intensely interpretative Bible reading, albeit of a form different
from that generally taught by academic literary critics (and indeed, theologians).
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Author biography

Daniel Allington is Associate Professor of Digital Cultures at the University of the West of England. His first book, Communicating in English: Talk, Text, Technology (co-edited with Barbara Mayor), was published by Routledge in 2012, while his second, the Blackwell History of the Book in Britain (co-authored with Siân Echard, David Brewer, and Stephen Colclough under the editorship of Zachary Lesser) is forthcoming from its eponymous publisher in 2017.

Appendix

To generate the graphs visualised and analysed in this article, a node was created to represent each review, and each pair of nodes was connected with an edge of weight equal to the number of variables whose values were the same for both of the reviews in question. Only values other than 0 were used, in order to avoid counter-intuitively creating a heavily weighted edge e.g. between a node representing a review coded + for one variable and 0 for everything else and a node representing a review coded – for the same variable and 0 for everything else. Only categorical variables were used, as the chances of similarity in coding are much higher with binary variables. When the graphs were visualised, more heavily weighted edges were represented with thicker, paler lines that were drawn before the thinner, darker lines representing more lightly weighted edges in order to prevent the former from obscuring the latter.
Given that edges in the resulting graphs represent points of similarity, graph-based measures of similarity could be used. The density of a simple graph is its actual number of edges divided by the maximum number of edges that would be possible given the number of nodes. A graph representing a set of reviews wherein every review had been recognised to have at least one similarity with every other review would have a density of 1. In the graph shown in Figure 1, there are five edges out of a maximum possible of six, so the density is 0.83 (all fractions in this article are rounded to two decimal places). If a graph of a given number of nodes has a large number of edges, this means that many of the reviews represented by the nodes had some degree of similarity to one another in the way in which they were coded. Because an edge in the graph analysed here has a maximum possible weight (i.e. the total number of variables used in constructing the graph), it is possible to extend the notion of density to take account of the weight as well as the number of edges. In calculating what is here called ‘weighted density’, the total weight of all edges in the graph was divided by the maximum possible number of edges multiplied by the maximum possible edge weight. A weighted density of 1 would signify that all represented reviews had been coded identically. In the graph visualised in Figure 1, the edges have a total weight of eight, as compared to a maximum possible weight of 18, so the weighted density is 0.44.

As this could under-estimate similarity in a graph or subgraph representing reviews assigned few values other than 0, an additional measure termed ‘normalised weighted density’ was developed. This was calculated by dividing the total weight of all edges by the maximum possible number of edges multiplied by the mean proportion of used variables per review that had non-0 values. If all reviews represented in a graph were assigned identical values for all variables that were not assigned the value of 0, the graph will have a normalised weighted density of 1. The normalised weighted density of the graph in Figure 1 is the same as its weighted density, because no variables were assigned a value of 0.