OUTLIERS, IMPACT, AND RATIONALIZATION IN LINGUISTIC CHANGE

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Quotative be like is a rapid global innovation, yet no evidence pinpoints when it arose, under what circumstances, or the consequences of its emergence. Using a data set spanning four cities and two hemispheres, we document systemic regularity across time and space. The results force us to confront three issues: the uniformitarian principle, the criterion of face-to-face contact in the diffusion of language change, and the nature of language as a complex adaptive system. Be like is an outlier, it has had a major impact on the linguistic system, and it can only be rationalized by hindsight, demonstrating the possibility of significant random events outside the predictable structures and processes in language. We conclude by suggesting that be like is a (linguistic) black swan event (Taleb 2010).*

Keywords: be like, linguistic change, diffusion, uniformitarianism, complex adaptive system, black swan event

1. INTRODUCTION. Nearly thirty-five years ago, quotative be like, as in 1, was just being noticed (Butters 1982). Over the following decade, it began to make regular appearances in the sociolinguistic literature, with emphasis on American varieties (e.g. Blyth et al. 1990, Meehan 1991, Romaine & Lange 1991, Ferrara & Bell 1995). Observing be like in new locales, Tagliamonte and Hudson (1999:168) suggested that its diffusion ‘may be a very good linguistic indicator of the types of developments and changes we might expect from the putative ongoing globalization of English’. Tagliamonte and D’Arcy (2004:493) subsequently affirmed that ‘one of the most striking developments [in English] is the vigorous encroachment of quotative be like’. More recently, Tagliamonte (2012:248) described be like as ‘possibly the most vigorous and widespread change in the history of human language’. The latter stance is the one we take up here. Our goal is to illustrate the ways this linguistic phenomenon defies current epistemologies concerning historical language change, to reevaluate the uniformitarian principle, and to propose an alternative theoretical framework for understanding unpredictable linguistic events.

(1) a. Then they called him onstage and I’m like ‘What? What’s going on?’
   (f, b.1980; TO) 1

   b. The teacher turned around and said ‘Who fluffed?’ And we all laughed at him because we’re like ‘We know what you mean but who talks that way?’
   (m, b.1979; VIC)

* We gratefully acknowledge the support of the Social Sciences and Humanities Research Council of Canada for Standard Research Grants from 2001 to the present (to Tagliamonte) and #410-2011-0219 (to D’Arcy), the Research Opportunities Program at the University of Toronto (Tagliamonte), the College of Arts and School of Languages, Cultures, and Linguistics at the University of Canterbury (D’Arcy), and the University of Western Australia for a 2012 Research Development Award and a 2013 Research Collaboration Award (Rodríguez Louro). We are indebted to many of our colleagues for their input, including Guy Bailey, Dave Britain, Brian Joseph, Jennifer Smith, Meredith Tamminga, Peter Trudgill, and Anthony Warner, although the views we present are our own. Adam Schembri deserves special mention for his fateful Facebook post that sent us in search of black swans and ultimately to the exploration of outliers and their impact. The extensive data extraction and coding for the four studies was completed by a skilled team of research assistants over the past ten years in four research labs, from Toronto to Perth. Earlier versions of this manuscript were presented at NAW 42 in Pittsburgh (2013) and LSA 88 in Minneapolis (2014). We thank everyone who has responded to this work, especially for their disbelief—a characteristic of rationalization. We look forward to further discussion.

1 Parenthetical information following individual examples provides speaker gender and year of birth, followed by urban provenance: TO: Toronto, VIC: Victoria, CHCH: Christchurch, PTH: Perth.

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c. I couldn’t sleep and I *was like* ‘What do I do? I’m not getting up ’cause it’s like three o’clock in the morning.’ (f, b.1983; CHCH)

d. And I *’m like* ‘Ah, it’s an annoying thing!’ (m, b.1982; PTH)


In the 1990s, when *be like* was associated with adolescents, the literature reported it to be recent (e.g. Blyth et al. 1990, Ferrara & Bell 1995). If the first generation of users can be dated to this period, we should be able to trace the innovators. In current usage, *be like* is highly productive across all national varieties of native-speaker English (i.e. in the Inner Circle; see Kachru 1985, 1992) and appears to be used with analogous, highly constrained patterns (see the examples in 1). In this analysis, we track *be like* in order to expose the trajectory of development that it has followed within the broader context of direct quotation in spoken narrative. We illustrate how it has arisen simultaneously and with parallel patterning across major varieties of World English: Canada, New Zealand, Australia. To our knowledge, such a development is unprecedented in the recorded history of language change, and for this reason, *be like* challenges our understanding of language more generally, and the uniformitarian principle and linguistic variation and change in particular.

### 2. Data and methods.

This article draws on a collaborative project designed to enable cross-variety comparison and makes use of four large synchronic sociolinguistic corpora. These materials represent the spoken vernacular of four cities, in three countries, on two continents and two island nations. A comparison of this magnitude requires a carefully constructed sample and analytic design. Furthermore, materials should be comparable, based on similar collection methods and having a balanced constituency. The current corpora consist of naturalistic conversational materials. They were collected using traditional Labovian interview methods, concentrating on speakers born and raised in urban conurbations. We operationalized a single, shared definition of the variable and the variable context, and we implemented a uniform configuration of predictors across the data sets. The variable itself, direct quotation, further constrains comparability of the data. Tokens are largely restricted to narrative complicating action (Schiffrin 1981:58; see also Hymes 1977, Wolfson 1978, Rodriguez Louro & Ritz 2014), which not only presents an ideal site for quantitative analysis because narratives are a naturally bound unit of discourse (Schiffrin 1981:45), but also unifies the samples since the overarching discourse genre is comparable across the board (Tannen 1986, Blyth et al. 1990).

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2 Rural, ethnic, and/or minority situations may exhibit local deviations (see D’Arcy 2010, Cukor-Avila 2012, Tagliamonte 2014).
2.1. The corpora. The system of direct quotation in spoken vernacular English has been changing for at least 150 years (Buchstaller 2011, D’Arcy 2012). Historically confined to speech reporting, quoted self-revelation has developed as a regular and productive rhetorical device of storytelling, and systemic constraints have emerged and expanded to significantly condition variation within the sector (D’Arcy 2012:365–66). Nonetheless, it is clear that be like is a relatively recent form within the reconfigured complex. Be like is generally held to be an innovation originating in the United States (Blyth et al. 1990, Romaine & Lange 1991, Ferrara & Bell 1995, Tagliamonte & Hudson 1999, Buchstaller & D’Arcy 2009, etc.). The first suggestion that it had begun to spread beyond North America was made by Romaine and Lange, who noted ‘traces of a similar development in British English’ (1991:248–49). By the middle of the 1990s, it represented 13% of all direct quotatives in Canadian English and 18% in British English (Tagliamonte & Hudson 1999:158). Although be like was increasing in both real and apparent time, at that time it remained confined to speakers below the age of forty years (Blyth et al. 1990, Romaine & Lange 1991, Ferrara & Bell 1995, Tagliamonte & Hudson 1999, Tagliamonte & D’Arcy 2007, Buchstaller & D’Arcy 2009, D’Arcy 2012). Given the information available at the time, Tagliamonte and D’Arcy (2007:204) suggested that North American speakers born in the early 1970s were the first generation of native users.

We are now in the position to test these claims by examining the rise and spread of be like on a scale that has not been available before. Traditional understandings of language change view it as originating in areas of cultural or political dominance (i.e. focal areas) and then diffusing outward (e.g. Weinreich at al. 1968:153–55, Bynon 1977:214, McMahon 1994:229; but see Trudgill 1986, Bailey et al. 1993, Horvath & Horvath 2001, 2002). There are three central hypotheses about how this progression takes place. The wave model (sometimes referred to as the contagion model) predicts that change spreads regularly outward from a central point (e.g. Bloomfield 1933, Trudgill 1986, Bailey et al. 1993, Labov 2003, Britain 2004, 2010). The gravity model predicts that change spreads based on population size and that progression need not be regular across geographic space (e.g. Trudgill 1974, 1986). In hierarchical models, like the cascade model, change moves from the largest to the next largest city in a predictable order within regions (e.g. Boberg 2000). Regardless of pathway, the evidence from dialectology is that diffusing forms ‘mutate en route’ (Britain 2010:149; see also Labov 2007). If we take these models as a starting point, we would predict incremental uptake of be like across our corpora, correlating with increased geographic distance from its North American epicenter. In addition, because it represents a change in progress, we expect diffusion to also have a temporal analogue. To track these aspects of be like, we first focus on the entire speech community in each of the four locales. Then, we narrow the focus to concentrate on those sectors of the population who use be like.

Toronto. The Toronto English Archive (TEA) (Tagliamonte 2003–2006) represents the largest and most cosmopolitan city in Canada (metropolitan area population 6.1 million). The TEA contains well over 300 hours of casual, spontaneous speech from individuals born and raised in the city, with birth dates spanning 1920–1989. Situated in the eastern province of Ontario, Toronto is extremely multicultural and it is an economic and cultural hub within the national landscape. It is paramount in the dissemination of commercial (finance, insurance, real estate, trade, manufacturing, etc.), cultural, and political innovation, as well as in the presentation of key multifunctional infrastructure (legal, medical, entertainment, etc.). Indeed, it is one of the largest cities in North America (Census 2011) and is considered a global ‘alpha city’ (Sassen 2000). Assuming a
model of linguistic diffusion in which large and powerful urban centers are at the forefront of innovation (e.g. the gravity model or cascade model; Trudgill 1974, 1986, Bailey et al. 1993, Labov 2003, 2007), Toronto can be considered ‘ground zero’ for large-scale language change in North America (alongside other such centers, such as New York City, Chicago, Los Angeles, etc.).

**VICTORIA.** The second Canadian data set comes from the Synchronic Corpus of Victoria English (SCVE) (D’Arcy 2011–2014), a collection of sociolinguistic interviews conducted in Victoria, British Columbia, from 2011–2012. The corpus contains over 200 hours of casual speech from locals born 1913–1996. Victoria, a small urban center with a metropolitan population of 345,000, is situated on the western edge of Canada, at the southern tip of Vancouver Island. To paraphrase Canadian author Margaret Atwood, the province of British Columbia is as far away from Toronto as one can get without drowning; Victoria is farther yet. Victoria is the provincial capital, and it has a thriving technology sector. It is the major urban center of the region (though not of the province). In contrast to Toronto, Victoria has a strong Anglo-English history and cultural identity, and it remains relatively uniform in its demographics, with just 12% of its population belonging to a visible ethnic minority (Census 2011).

**CHRISTCHURCH.** The New Zealand data are drawn from the Canterbury Corpus (CC), the synchronic component of the Origins of New Zealand English Archive (Gordon et al. 2004, Gordon et al. 2007). The full archive contains over 1,000 hours of recordings, and a significant number of these comprise the CC. The CC is a sociolinguistic monitor corpus, growing annually since 1994 (speaker years of birth: 1926–1985); we concentrate here on materials collected from 2000–2005. There is no regional circumscription of the CC, and regional details are not available for individual participants. Recordings are made in Christchurch, the largest city on New Zealand’s south island and the main urban center in the Canterbury region. While many speakers in the CC are from Canterbury, other regions of New Zealand are represented (e.g. Auckland, Taranaki, Otago, etc.). The Christchurch metropolitan population is reflective of that of the Canterbury region more generally, and it is similar demographically to that of Victoria. The population is roughly 341,000 (Statistics New Zealand 2013) and has strong English roots.

**PERTH.** Our Australian data come from the Corpus of English in Australia, housed at the University of Western Australia. This corpus contains over 300 recordings from Melbourne- and Perth-born speakers. We use only the Perth data here, recorded 2011–2013. These materials contain over 150 hours of casual speech, from speakers with birth dates from 1922–2002. Located farthest from Toronto, on the far west coast of Australia, Perth is in fact the second largest city represented here, with a metropolitan population of 1.8 million (Australian Bureau of Statistics 2011). It is the parliamentary and judicial capital of Western Australia, and it is central to the mining industry in the state. Like Victoria and Christchurch, however, the city is not particularly diverse. Indeed, its population is noted for its high proportion of British-origin residents (64.7%; Australian Bureau of Statistics 2011).

The representative sampling methods utilized in the creation of these four corpora reflect the vernacular of more than 8.5 million speakers, spread across three countries (Canada, New Zealand, Australia) and both hemispheres. Indeed, the geographic coverage of this collection is uncommon in variationist sociolinguistic research, spanning 10,088 miles (16,235 kilometers) from a major global city in eastern North America to Perth, on the far west coast of Australia (but see also Buchstaller & D’Arcy 2009). That these cities contrast along regional, demographic, cultural, and socioeconomic (in terms
of economic drivers) indicators is critical to the analysis we present here. The geographic expanse is intended to provide insight into both rates and routes of geographic diffusion, while recognizing that geographic distance is unlikely to be the only underlying factor in diffusion (see Trudgill 1974, Britain 2013). Thus, within Canada there is the contrast between the major urban center of Toronto and the more peripheral Victoria (geographically and otherwise). On the larger scale, Christchurch and Perth provide samples from vantage points progressively removed from the putative North American epicenter for be like. Victoria and Christchurch are quite small cities, while Perth is larger, and Toronto outsizes them all. However, each is the focal urban center in its region. It is an empirical question whether there are similarities or differences across these cities in the use of be like.

2.2. Circumscription and Coding. As with previous variationist sociolinguistic analyses of English direct quotation (e.g. Tagliamonte & Hudson 1999, Tagliamonte & D’Arcy 2004, 2007, Buchstaller & D’Arcy 2009, D’Arcy 2012, Rodriguez Louro 2013), the envelope of variation was functionally defined as constructed dialogue (Tannen 1986, 2007), the reformulation of thought, speech, action, nonlexicalized sounds, and gestures in the voice of oneself or of another. Such ‘speech within speech’ (Vološinov 1986 [1929]:115) may be introduced by a host of verbs, including say, think, go, be like, tell, and cry; it may also be introduced by the null form, zero. As summarized in Table 1, applying this definition resulted in more than 11,000 examples—5,478 from Toronto, 2,042 from Victoria, 1,228 from Christchurch, and 2,378 from Perth. These tokens come from 562 individuals, who together capture the development of the quotative system over the twentieth century; the birth dates of our speakers span from 1916 to 2002.

<table>
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<tr>
<th>CITY</th>
<th>RECORDING YEAR</th>
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<th>SPEAKERS (N)</th>
<th>TOKENS (N)</th>
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<td>1939–1983</td>
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<td>1,228</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>562</td>
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Table 1. Sample constitution and token counts.

The materials summarized in Table 1 offer a robust opportunity for comparative analysis. Nonetheless, the collection dates represented by these data sets are diverse. Some of the recordings were made in 2000, others in 2013. This has ramifications for synchronic analysis, particularly when dealing with an innovative feature that has diffused extremely quickly, both across and within populations. In order to normalize across generationally constituted materials collected at different times, we focus on speaker date of birth (see also Sankoff & Blondeau 2007, Sankoff 2013). Such accountability is a necessary analytical heuristic for tracking the diffusion of be like and the subsequent constraints on its use as operative in the various speaker cohorts considered here. Because our concern relates to the diffusion and embedding of be like across varieties of English, we focus on constraints that are well established in the literature as having a probabilistic effect on its use within the quotative system (Blyth et al. 1990, Ferrara & Bell 1995, Tagliamonte & Hudson 1999, Cukor-Avila 2002, Tagliamonte & D’Arcy

3 If divergences from these patterns appear in some locale, it is critical to ensure that they do not derive from poor cell distributions or individual idiosyncrasies.


(2) a. I'm like ‘Just be Canadian!’ (m, b.1986; TO)
   b. I’m like ‘Sweet, you go have fun.’
   c. And we’re like ‘No, we’re New Zealanders.’
   d. Yeah, we’re like ‘Fair enough, Chief.’

Content of the quote. Throughout its history, be like has been associated with both internal dialogue/attitude (3a) and nonlexicalized sounds (3b) (Butters 1982, Tannen 1986). Although be like is not pragmatically restricted (3c, 3d), its association with reported thought has been the strongest predictor with respect to the nature of the quote (Tagliamonte & Hudson 1999, Tagliamonte & D’Arcy 2004, 2007, Buchstaller & D’Arcy 2009). Indeed, current analyses suggest that be like entered the repertoire to encode (first-person) internal dialogue, as this reporting mode gained prominence for direct quotation in narrative monologues (Tagliamonte & D’Arcy 2007, D’Arcy 2012).

(3) a. I was like ‘What the hell am I doing? This sport is stupid!’ (m, b.1984; TO)
   b. And I was like ‘[speaker moans].’
   c. And then she’s like ‘Do you have a break?’
   d. He’s got the TV on and he’s like ‘[speaker gestures].’

Tense/temporal reference. From the outset be like has been strongly correlated with the present tense (Blyth et al. 1990, Romaine & Lange 1991). However, studies from 2004 onward have highlighted the importance of distinguishing between surface morphology and temporal reference (e.g. D’Arcy 2004, Tagliamonte & D’Arcy 2007, Buchstaller & D’Arcy 2009). Specifically, forms that are morphologically and referentially present tense are dissimilar in their use from those that display present surface morphology but refer to a past situation (i.e. the historical present (HP); see Wolfson 1978, 1979, 1981). We distinguish between past morphology with past temporal reference (4a), present tense with present temporal reference (4b), and present morphology with past temporal reference, the HP (4c).

(4) a. They thought it was an odd cell phone number but I was like ‘Oh well it’s a Kiwi number.’ (m, b.1976; CHCH)
   b. Whenever anyone says anything maths, I’m just like ‘Nah, can’t do it.’
   c. We were just sitting at her house and she’s like ‘Jason, can I paint your nails?’

Exclusions and special circumstances. Due to our focus on the major constraints on be like, we have abstracted away from a number of nuances in the system. While all second-person subjects were extracted and included in the overall analyses, they are not considered in tests for person effects. This is because second persons have not figured in the literature of quotation, and we wish to maximize the comparability of our results with those from previous research. Quotative clauses with nonreferential subjects are excluded a priori (it’s like ‘I’ll do it later’, where ‘it’ is not a person or a thing). These
constructions with direct quotation are confined to *be like*, and as such, they are exceptional within the system (see Tagliamonte & D’Arcy 2004, 2007). Within the content of the quote predictor (but not overall), written quotes, internet dialogue, gestures, and nonlexicalized sounds have been excluded so as to focus on the critical thought versus speech dichotomy. Finally, within the tense/temporal reference predictor (but again, not overall), less frequent tense and aspectual constructions such as future temporal reference, past perfect, and habituals were excluded, again to maximize comparability and to narrow the focus to those contextual effects that are established in the literature.

2.3. Analytic methods. Our analytical framework is variationist sociolinguistics, with particular emphasis on the techniques and methods of comparative sociolinguistics (Poplack & Tagliamonte 2001, Tagliamonte 2002). The former entails adherence to standard variationist practice, approaching direct quotation as a system of grammar and including in our analyses all forms that share the same function (cf. the principle of accountability; Labov 1972:72). The latter entails comparison of correspondences provided by the results of statistical analysis, which emphasizes significance, constraint ranking, and relative strength of predictors (Tagliamonte 2012).

We appeal to several types of statistical modeling, beginning with data exploration using descriptive statistics. Then we turn to conditional inference trees (see Strobl et al. 2009, Tagliamonte & Baayen 2012) to reveal the relevant temporal juncture points in our data, followed by fixed-effects logistic regression models in GoldVarb (Sankoff et al. 2012) to test the simultaneous and multifaceted effects of the predictors on the use of *be like*. The purpose of this latter approach is to reveal the operation of the variable grammar among the primary cohorts who use the form. In the final step of the analysis, we run mixed-effects logistic regressions using the lme4 package in R (R Core Team 2007, Bates et al. 2011). For these models, we test the main effects found to be significant in the fixed-effects runs, as well as a random intercept for individual and a fixed effect for city. We also include an interaction term for each linguistic predictor to test the interaction between city and the internal constraints. Employing these models and triangulating across them enables us to statistically validate cross-corpus correspondences and differences (see Tagliamonte & Denis 2014). If an interaction term is significant, this indicates that there is a difference between communities for that predictor. If interaction terms are not significant, we can interpret this to mean that the communities are not different from each other with respect to the internal constraints on *be like*, especially if this result corroborates frequency and distribution patterns.

In light of recent investigations into the diffusion of change (Labov 2007, Tagliamonte 2014, Tagliamonte & Denis 2014), where the primary mechanism is adult-to-adult diffusion, a recent innovation such as *be like* should exhibit some degree of breakdown in the replication of linguistic forms, rules, and constraints as it spreads across communities.

3. The rise of an innovation.

3.1. Distributional analyses. Figure 1 tracks the proportions of the primary verbs of quotation across the four corpora. In all data sets, speakers born in the first half of the twentieth century exhibit a system dominated by the traditional verb of direct quotation in English vernacular narrative, *say* (D’Arcy 2012:350). Speakers born in the second half of the twentieth century exhibit an antithetic system: *say* is in decline and *be like* increases, in most cases dramatically. When frequency is viewed as a function of speaker date of birth, as we have done here (following Gordon et al. 2004, Hay & Schreier 2004, Sankoff & Blondeau 2007, Tagliamonte 2012, Sankoff 2013), it is ap-
parent that *be like* exhibits parallel trajectories across these four geographically disparate cities. In every locale it is incipient among speakers born in the 1960s. Its frequency increases rapidly and monotonically across speakers born in the following two decades, and, for the corpora with a sufficient number of young speakers, Toronto and Perth, it crests among the youngest speakers. For Christchurch we do not have recordings from speakers born in the 1990s (cf. Toronto), and for Victoria we do not have them for speakers born after 1998 (cf. Perth).

These corpora were created in different years. As a result, it appears that *be like* is more advanced in Victoria, but this is an artifact of collection point, which taps this change at a later stage in its development. The Victoria materials were recorded roughly ten years after those from Toronto (compare 2002–2004 to 2011–2012). The Perth data are even more recent, with some recordings collected as late as 2013. In contrast, the Christchurch recordings predate these by a considerable gap, recorded as early as 2000. Even with these considerations in hand, Fig. 1 demonstrates that *be like* overtook a large proportion of the quotative system in a relatively short period—under three decades. Moreover, it did this simultaneously in geographically noncontiguous locales. This observation is reinforced in Figure 2, which shows a contrastive perspective on the rise of *be like*.

The shared properties of *be like*’s trajectory across these corpora are remarkable. Where there is appropriate data, a peak in apparent time is visible—a key corollary of change in apparent time (Labov 2001, Tagliamonte & D’Arcy 2009). The peaks are similarly sharp, a characteristic of change at the midcycle of the S-curve (Labov 2001, Tagliamonte & D’Arcy 2009). Furthermore, *be like* accelerates within the same generational cohort—speakers born in the 1970s. In other words, despite the geographic breadth and the diversity of these urban centers, *be like* increases at the same time, in the same cohort, in all locales.

A question so far unasked in research on the synchronic evolution of direct quotation concerns the location of the ‘shock points’. That is, where are the generational cohorts...
Language change is typically discontinuous (Janda & Joseph 2003:20), proceeding via bursts of change (Lass 1997:304). Neither the data nor the methods utilized to date have been able to isolate the points of deviation (either in space or time) in the diffusion of *be like* with any degree of statistical rigor. Our current corpora enable this kind of assessment, which we operationalize via a series of conditional inference trees, using date of birth as a continuous predictor.

Conditional inference trees expose the quantitative structure of a data set, pinpointing fine-grained distinctions among predictors (Strobl et al. 2009, Tagliamonte & Baayen 2012). Given the results in Figs. 1 and 2, we focus on the effect of birth year to identify the precise generational divisions in the upsurge of *be like*. To get a full picture, we include data from all speakers, not strictly those who use *be like*. These results are presented in Figures 3a–d. They corroborate parallelism across corpora: the temporal juncture points are similarly situated, regardless of geographic locale.

In Toronto (Fig. 3a), the first major shock point is in 1973, partition 1 at the top of the tree. We interpret this split between speakers born before and after 1973 as the primary evolutionary locus for *be like*. It is incipient among speakers born after 1967, partition 2, creating the second shock point. The 1950s divide those who do not use *be like* at all from those who have adopted it as a marginal form in the repertoire. For speakers born in the 1950s, *be like* is exceptional; only select individuals use it. In contrast, for the youngest speakers in the sample, 1987 is the critical year, demarcating the discontinuity (i.e. the peak in apparent time; see Fig. 1) between individuals who have passed the age of stabilization and younger speakers who are still participating in change (i.e. increasing their use of *be like*; cf. collection date 2002–2004) (Labov 2001:463; also Tagliamonte & D’Arcy 2009:100).

For Victoria (Fig. 3b), the primary division is 1970, comprising the first major wave of acceleration for *be like*. Here too this innovation is incipient throughout the 1960s; 1963 divides early users from marginal adopters, born subsequent to 1948, and the primary users, born after 1987.

The Christchurch data (Fig. 3c) have the smallest window of coverage of the materials considered here, and this is reflected in a less articulated conditional inference tree. Nonetheless, consistent with the results for Toronto and Victoria, the primary division is the 1970s: 1975. *Be like* is incipient among speakers born after 1968, creating the second shock point, and here too the 1980s mark a watershed.

4 Scant use of *be like* by older speakers likely represents lifespan change, child-to-adult influence under favorable social circumstances (see Tagliamonte & Denis 2014:122, n. 42).
Figure 3a. Conditional inference recursive partitioning tree: *be like* in Toronto.

Figure 3b. Conditional inference recursive partitioning tree: *be like* in Victoria.

Figure 3c. Conditional inference recursive partitioning tree: *be like* in Christchurch.
For Perth (Fig. 3d), with a broad community window, the primary split is 1980. This is due to the fact that, like Toronto, the sample includes preadolescents. Again, a significant point of acceleration occurs with speakers born in the early 1970s, at partition 2.5. As before, the 1950s divide the data between be like users and nonusers, partition 3.

In sum, there is no evidence for incremental geographic spread of be like. Rather, it emerged full-blown at the same juncture in time across a great distance. Speakers born in the early 1970s are the generation on the frontlines for be like: 1970 (Victoria), 1971 (Perth), 1973 (Toronto), or 1975 (Christchurch)—a trend that transcends individual communities. The conditional inference trees expose simultaneous and parallel development: be like rose to prominence in the same age cohort on a global scale. Such a trajectory is undocumented in the literature, making it particularly important to scrutinize the circumstances and consequences of the emergence of be like. To move further in our understanding, a broader interpretive context is required. We now turn to the question of the linguistic mechanism underlying this ubiquitous, simultaneous, and unprecedented rise.

### 3.2. Logistic regression analyses

We approach this question using two logistic regression procedures. We first employ comparative fixed-effects models to examine the operation of the variable grammar constraining be like in each of the two primary cohorts isolated by the conditional inference trees: that is, speakers born in the 1970s, and speakers born in the 1980s, who fast-tracked the change. We configure an identical model for each of the four cities—Toronto, Victoria, Christchurch, and Perth. We then apply a mixed-effects model to the full data set in order to control for the random effects of individual in the sample, as well as to assess the interaction between predictors. Given the large number of quotative verbs in these materials, and following a variationist sociolinguistic approach (which emphasizes systemic rather than form-based considerations; see Tagliamonte & Hudson 1999:150ff., Tagliamonte & D’Arcy 2007), we treat the choice mechanism as binomial, contrasting be like versus all other forms. This enables us to focus on the predictors constraining be like and to determine whether it behaves similarly in all data sets.

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5 Given the small Ns at node 6 (N = 7) in Fig. 3d, we set aside the fifth partition, beneath 1959.
The 1970s. We begin the comparison with the 1970s cohorts in each corpus. Table 2 presents the results of four independent fixed-effects logistic regression analyses. In this table, factor weights (‘FW’) report weighted probabilities; those closer to 1 indicate contexts that favor selection of *be like*, whereas those closer to 0 indicate disfavoring contexts. When the values within a group hover close to .50, the predictor is typically not significant, as the contexts neither favor nor disfavor selection of the dependent variable. Three lines of evidence apply to the results: statistical significance (assessed at the 0.05 level), constraint hierarchy (the direction of effect within a predictor), and constraint ranking (the relative effect of a predictor vis-à-vis other predictors in the model, reflected via the nonstatistical measure of *range*, which gauges the strength of the factor group in the model) (for full discussion see Poplack & Tagliamonte 2001:92–94, Tagliamonte 2006).

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**TENSE**

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Table 2. Predictors constraining *be like* among speakers born in the 1970s in Toronto, Victoria, Christchurch, and Perth.

The corrected means or input probabilities in Table 2 measure the overall probability of the dependent variable across the data sets. As discussed above, the fluctuations are due to differences in collection time. Despite the varying frequency of *be like*, there is parallelism across these four corpora for all predictors, highlighting the critical distinction between use of a form on the one hand and the variable grammar on the other (Poplack & Tagliamonte 2001, Tagliamonte 2012:66).

For tense/temporal reference, the favored status of the HP obtains in every corpus. It is also the case that in each locale, *be like* is least likely to be used with past tense, while the simple present tense has an intermediate effect. Furthermore, in every location except Christchurch, tense/temporal reference is the strongest predictor in the model. For grammatical person, the regularity of the constraint is patent: in every city, first person favors, third person disfavors. For content of the quote, the effect is as expected in

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6 Factor weights are uncentered in GoldVarb, meaning that they are estimated based on the number of tokens in a level (i.e. more robustly represented levels have a larger effect on the estimates within groups).
Toronto and Victoria, where internal thought favors *be like*, but this predictor does not operate in either Christchurch or Perth in this early cohort. Finally, for gender, there is again a strong effect across all four corpora, with women favoring.

**The 1980s.** The evidence from speakers born in the 1980s is essentially identical to that from speakers born in the 1970s, but where differences obtain they are important. First, a qualitative reorganization is evident for tense/temporal reference such that now both present tense and past tense disfavor *be like*. In contrast, the HP is a highly favorable context for this innovation. The effect of this predictor is robust: it is by far the strongest constraint in all locales. Similarly, the effect of grammatical person is regular: first person favors, third person disfavors. This is the same as with the 1970s cohort. With respect to content of the quote, the effect again operates in the expected direction in Toronto and Victoria, and it is also significant, operating in the expected direction, in Christchurch. Only in Perth does this predictor fail to exert a statistically significant effect on the use of *be like*. Finally, as with the 1970s cohort, a parallel gender effect operates: females favor. The exception is Perth, where there is a reversal: males (weakly) favor.

**The global perspective.** The results of the comparative analyses in Tables 2 and 3 reveal that *be like* is doing the same linguistic work in all locales and within precisely the same age cohorts. The logistic regressions indicate that regardless of where individuals were born, if the date was in the 1970s or the 1980s, *be like* is favored for first-person quotation and the HP. In Toronto, Victoria, and (for the 1980s) Christchurch, *be like* is also favored for quoted thought. Across two hemispheres and over 10,000 miles, the same predictors are significant and operate in the same direction within the broader architecture of the quotative system.

What remains to be assessed is the effect of locale itself. That is, despite their broad similarities, each community has been modeled independently of the others. Are the cities indeed undifferentiated with respect to the underlying variable grammar that con-
strains *be like*? To answer this, we combine the data for speakers born in the 1970s and the 1980s in a mixed-effects analysis. This model is reported in Table 4, where all data are included and city is treated as a fixed effect. In contrast to the previous models, we include individual speakers (individual) as a random effect.⁷

This model returns a number of important results. Each of the main linguistic predictors is statistically significant over and above the effect of the individuals in the sample. As in Tables 2 and 3, tense/temporal reference has the strongest effect in these data (*p* < 0.0001), closely followed by the effect of grammatical person. Already suspect from the fixed-effects models, content of the quote is the weakest (*p* < 0.05). The robustness of the main predictors in Table 4 confirms that the underlying grammar operates uniformly across corpora, regardless of the demographic makeup of the city or its relative proximity/distance to the putative epicenter of *be like*.

<table>
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<th>AIC</th>
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### RANDOM EFFECTS

<table>
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<th>variance</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td>speaker (intercept)</td>
<td>1.826</td>
<td>1.3513</td>
</tr>
</tbody>
</table>

Number of observations: 4,095; Groups: individual, 191

### FIXED EFFECTS

|                | ESTIMATE | SE     | z-VALUE | Pr(<|z|)   |     |
|----------------|----------|--------|---------|------------|-----|
| (intercept)    | −0.2876  | 0.3877 | −0.742  | 0.458213   |     |
| content.thought| 0.8001   | 0.3811 | 2.099   | 0.035790 * |     |
| person.third   | 1.2285   | 0.3298 | 3.725   | 0.000195 ***|     |
| tense.HP       | −1.3854  | 0.3319 | −4.174  | 3.00e-05 ***|     |
| city.PTH       | −0.2805  | 0.4287 | −0.654  | 0.512887   |     |
| city.TO        | 2.8362   | 0.5028 | 5.641   | 1.70e-08 ***|     |
| city.CHCH      | 0.9113   | 0.5299 | 1.720   | 0.085468   |     |
| content.thought : city.PTH | −1.3437 | 0.4152 | −3.237  | 0.001209 **|     |
| content.thought : city.TO | −1.3429 | 0.4606 | −2.916  | 0.003549 **|     |
| content.thought : city.CHCH| −2.0199 | 0.4765 | −4.239  | 2.25e-05 ***|     |
| person.third : city.PTH| −0.5698 | 0.3543 | −1.608  | 0.107819   |     |
| person.third : city.CHCH| −0.3271 | 0.4248 | −0.770  | 0.441275   |     |
| person.third : city.VIC| −0.4743 | 0.4221 | −1.124  | 0.261185   |     |
| tense.HP : city.PTH| −0.3346 | 0.3610 | −0.927  | 0.354066   |     |
| tense.HP : city.CHCH| 0.3331  | −0.4122| 0.425   | 0.96800    |     |
| tense.HP : city.VIC| −0.6918 | 0.4300 | −1.609  | 0.107643   |     |

Signif. codes: 0 ‘***’, 0.001 ‘**’, 0.01 ‘*’, 0.05 ‘.’, 0.1 ‘ ’


⁷ The discrepancy between the speaker counts in Table 1 (*N* = 562) and the total number of individuals in the model in Table 4 (*N* = 191) is due to the extensive culling of the data based on the following criteria: (i) the model comprises only speakers born between 1970 and 1989, and (ii) we removed any datum that was not fully specified for the constraints. Existential *it*, second persons, zero subjects, and so forth were removed earlier in our procedures, following variationist practice in analyzing verbs of quotation (e.g. Cukor-Avila 2002, 2012, Tagliamonte & D’Arcy 2004, 2007, D’Arcy 2012, Rodriguez Louro 2013, Gardner et al. 2016, etc.).
For all examinations of city, we set Perth (PTH) as the reference level because in the models in Tables 2 and 3 it had minor differences. In Table 4, the results for city reflect the relative frequencies of be like within these speaker cohorts (b. 1970–1989). The more critical finding concerns the interaction between city and the internal predictors—content of the quote, grammatical person, and tense/temporal reference. The interactions with tense/temporal reference and grammatical person do not return a significant result. In other words, there is no interaction; the cities have the same variable grammar. When content of the quote is considered relative to city, Perth is set apart. Again, this is expected, since it is the only city where the content predictor was not selected in the models in Tables 2 and 3. Moreover, there is reorganization of the typical gender associations on be like (1980s males favor; Table 3). The content of the quote predictor is not robust. Is this behavior due to stage of development of the system, as has been found elsewhere, or is it due to mutation via diffusion? Given Perth’s peripheral geography (e.g. Bryson 2000:295), this is impossible to disentangle with the current evidence. We do know that the complete set of linguistic constraints visible in Tables 2 and 3 is also operative in England (Buchstaller & D’Arcy 2009, Gardner et al. 2016).

Our analyses to this point permit us to make the following interpretations. Speakers born in the 1960s were the first to use be like around the world. The next generation, born in the 1970s, accelerated its use, followed by continued uptake among speakers born in the 1980s. The distributional and statistical models confirm parallel inception in time, (mostly) parallel grammatical conditioning, and parallel developmental trajectories. This is a linguistic change that has gone from zero to virtual completion with a consistent variable grammar across space in the most telescoped time frame ever documented. How could this have happened?

4. FITTING A STORY. Traditional models of linguistic diffusion are prefaced on face-to-face contact between (adult) speakers (Trudgill 1986, Labov 2007). Whether the ultimate mechanism of spread is wave-like or emerges hierarchically, linguistic forms, structures, and innovations transition across cities following pathways of personal interconnectedness, even in the face of burgeoning media influences over the past twenty years (see Journal of Sociolinguistics 18.2, 2014). If we sustain the requirement for face-to-face contact in the diffusion of be like, then we need an appropriate social conduit.

Many longitudinal changes in English have accelerated in the second half of the twentieth century (e.g. Tagliamonte 2006, 2016, D’Arcy et al. 2013, Labov et al. 2013). This is not a coincidence. Scholars have documented extreme changes in all areas of science, technology, and human interaction in this period. Summarizing the impact of this era, Mead (1970) observed that ‘everyone born and bred before World War II is an immigrant in time’ (p. 70), resulting in a break between generations that was not only ‘wholly new’ but also ‘planetary and universal’ (p. 64). Government policies following World War II had particular impact on linguistic interaction, because they encouraged the establishment of international relationships. Furthermore, the period from 1945 to the early 1970s was characterized by worldwide economic expansion. This had far-ranging ramifications. Among these were the emergence of youth (sub)cultures, the insurgence of travel tourism in the 1960s, the burgeoning OVERSEAS EXPERIENCE (OE), and the advent of increasing foreign workers, international students, and business travel (e.g. Furnham 2010). The introduction of the jet plane in 1958 radically changed commercial aviation,

8 We note that these are direct quotes from Mead 1970. This famous citation is mostly misquoted in the literature, and given without page numbers.
Outliers, impact, and rationalization in linguistic change

Simultaneously replacing ocean liners as the primary mode of transatlantic travel. It was during the 1960s and 1970s that the demand for independent travel increased and demographics of travelers shifted to a broader sector of the population. By the 1970s, the convenience of air travel had conventionalized international exchanges—students, for example, would travel during the summer (see e.g. Boyne & Lopez 1979, Bilstein 1994, Heppenheimer 1995). In this context, the sheer scale of mundane long-distance mobility is of deep relevance because its quickening effect over the twentieth century ‘is a central feature of globalization’ (Carr 2010:10). We suggest that these unmatched developments—stemming from social, cultural, and political changes—lead to a concomitant linguistic renaissance.

Given the conventional wisdom that foregrounds personal connections in the spread of language change, this can only have had repercussions for global linguistic diffusion for the specific reason that contact became supralocal. For example, the hippe trail (mid-1960s to the late 1970s) brought groups of travelers from the United Kingdom, Western Europe, North America, Australia, New Zealand, South Africa, and Japan together. These individuals exchanged life experiences and ideas in cafes, hostels, and other gathering spots along the way. Indeed, permanent reminders remain scattered along the trail, such as Jhochhen Tole ‘Freak Street’ in Nepal, named for the hippies who frequented it during the height of the trail’s popularity (Bhattarai et al. 2005, Liechty 2005). Similarly, gap years, OEIs, and the like are defined by extended periods of travel, sometimes involving short-term work and stopovers. Scholars of global mobility have argued that ‘as patterns of dispersion intensify, they generate not just fragmented societies, but a new territorial cohesion’ (Barajas 2003:1). In this way, speakers from disparate, discontinuous regions come into contact in increasing numbers and with increasing intensity and, as part of the process, develop their own communities. Since their inception, the primary market for these new global opportunities has been youths, individuals in their late teens and early twenties, precisely the arbiters of language change and—as evident in our analyses—the main users of be like.

This newly emergent type of social networking that connects speakers from different places is distinct from traditional social structure. It pushes the boundaries of the speech community outward, creating the context for ‘off-the-shelf’ diffusion (Milroy 2007), which occurs when changes come about that do not require sustained, long-term contact. An off-the-shelf change is vigorous and has a wide currency, facilitated by the fact that its socio-symbolic meaning is not locally anchored. Quotative be like bears all the hallmarks of this type of innovation (Buchstaller & D’Arcy 2009, Haddican & Zweig 2012).

These factors operate in tandem with a suite of linguistic drivers. Despite its vigor and diffusion, be like did not emerge ex nihilo within the quotative system. Indeed, quoted speech is itself prone to recycling, articulated through underlying shifts in the operation and function of direct quotation (Buchstaller 2011, D’Arcy 2012). Furthermore, over the course of the twentieth century, English oral narrative style underwent considerable qualitative reorganization. Narratives typically comprise life stories (e.g. Linde 1993) and reportable events (e.g. Labov 2013). In the late twentieth century these become reconfigured to include psychological drama. As documented by Tagliamonte and D’Arcy (2007) and D’Arcy (2012), speakers became protagonists in their own, monologic performances; compare 5 and 6. This leads to a proliferation of first-person inner dialogue—the very niche of be like.

(5) He said ‘Well, if you join the Air Force, Pearl might be a good idea.’
And I said ‘Yes, but what could I do in the Air Force?’
And he said ‘Well, a cook.’ (m, b.1920; CHCH)
(6) I’m like ‘Shit, my parents are going to wake up ’cause of that.’
I’m like ‘Oh shit.’
I’m like ‘Okay, I gotta pretend like something happened, think something,
think something,’ right? (f, b.1985; TO)

This world-level social and linguistic backdrop provides the motivation and context
for the rise of *be like*. We have the right people, at the right time, in the right places. A
new quotative arises out of an organic change from below, accelerates in the context of
 hospitable, indeed fecund, social, cultural, and political circumstances, and diffuses
 across the jet trails of the 1970s. The conduit is face to face, but the context is the global
 community. Then *be like* moves onward, down the linguistic transmission lines from
 parent to child.

5. **Uniformitarianism and the unpredictable.** The explanation for *be like* that
we have just outlined provides an eloquent answer to our driving questions. However, it
is essentially a post-hoc interpretation, what can be criticized as ‘successions of anec-
dotes selected to fit a story’, and it does not constitute evidence (see e.g. Taleb 2010:
xxxii). We have yet to account for the natural and simultaneous emergence of a single
linguistic innovation at precisely the same point in time, in distinct and geographically
distant urban settings, among speakers born in the same generation—speakers who not
only use the same form but also employ a geographically coherent variable grammar.

Diachronic linguistics is founded on the **uniformitarian principle**, the proposition
that ‘knowledge of processes that operated in the past can be inferred by observing on-
going processes in the present’ (Christy 1983:iix). This methodological assumption origi-
nated in geology where the ‘renovative cyclical processes’ of the physical world are
evident in many natural phenomena (Hutton 1788, cited in Dean 1992:266). Moreover,
the understanding within linguistics has been that:

So far back as we can trace the history of language, the forces which have been efficient in producing its
changes, and the general outlines of their modes of operation, have been the same; and we are justified
in concluding, we are even compelled to infer, that they have been the same from the out-set. (Whitney
1867:253)

Uniformitarianism assumes a ‘regenerating natural calendar’ (Dean 1992:266), lead-
ing us to believe that processes can be modeled. Even unanticipated changes are in-
terpreted as possible and explicable on the basis of past events. However, what if
contemporary forces and modes of operation are not the same as before? We want to
argue that the processes of change we have laid bare in our analysis of *be like* are in fact
not identical to any reported in the past. This requires us to step back from what we be-
lieve to be true and entertain the possibility that something else is going on. The facts
surrounding the emergence and diffusion of *be like* can actually provoke a certain
amount of discomfort, perhaps because they call into question the inductive nature of
historical linguistics.

Social scientists work almost unreflectively with the bell curve, where the normal dis-
tribution permits statistical prediction and the ability to parameterize random variables.
Anything outside the curve is an outlier, despite the systematicity (not categoricity) by
which the curve is generated. Yet, as summarized by Ellis and Larsen-Freeman (2009:3),
‘both language and culture are emergent phenomena of an increasingly complex social
existence’. Communication has become nonlinear and recursive, causing events to snow-
ball on a broad scale (Taleb 2010:xxii). This means we can expect features to adapt within
their social ecology (i.e. environment). Recursion comes from speakers interacting both
locally and globally, and these interactions reinforce and spread changes as the same in-
dividuals move through their own local and global networks. This makes it more and more likely that something off the standard scale can happen.

Consider a view of linguistic change from the longue durée (Braudel 1980, 1993), focused on the study of direct quotation in New Zealand English over the late nineteenth and early twentieth centuries, illustrated in Figure 4.

Figure 4. Frequency of verbs for direct quotation in New Zealand English, by speaker year of birth (based on D’Arcy 2012:362, fig. 4).

Within this time frame the quotative system performs like a typical variable system. There are waves of change, and different generations favor different verbs (e.g. 1930s, think; 1940s, zero; 1960s, go). But in the late twentieth century there is a novel development unlike anything that had happened before. The extended time frame permits the nature of this change to be viewed in broad relief. Be like emerges conspicuously out of a long undulating history of shifting forms.

Examination of the broader historical record and extensive discussion with historical linguists leads us to suggest that there is something peculiar about this change. Its intrinsic nature is, upon reflection, unique. To be sure, there are increasingly broad-scale changes underway in language, such as the use of like as a pragmatic particle (D’Arcy 2007), fronting of the goose vowel (Cox 1999, Labov et al. 2006, Mesthrie 2010, Harrington et al. 2011), high rising terminals (Guy et al. 1986, Britain & Newman 1992, Grabe et al. 2000, Fletcher et al. 2002, Ritchart & Arvaniti 2014), /l/ vocalization (Horvath & Horvath 2001, 2002), and perhaps others. Despite the tantalizing reported similarities of these linguistic developments across World Englishes, there is no way to ascertain whether they resemble the type of change we have documented here until the appropriate sample design, databases, and analyses are constructed. It is also important to leave out of consideration unmarked, common, and predictable changes, which despite discontinuity in space, represent general and known processes of historical change (Trudgill 2014:217). These have never been considered evidence in comparative reconstruction. As far as we are aware, be like is the only change that is diffusing on a global scale, with temporal simultaneity and, critically, an attendant suite of parallel internal linguistic constraints. These characteristics defy any known theory about the diffusion of linguistic innovation (cf. Labov 2007). Conventional historical linguistic theories (e.g. wave theory, gravity model, cascade model, etc.), which use induction (as dictated by uniformitarianism), cannot explain it.
6. Language as a complex adaptive system. We suggest that the development of *be like*, given its telescoped evolution, complexity, and global uptake, is unprecedented in the linguistic record. We can begin to make sense of this by adopting a conception of language as a complex adaptive system with the following key features: multiple interacting agents in the speech community, adaptive speaker behavior informed by past and current interactions, and a system that is governed by multiplex competing factors, both linguistic and social (Ellis & Larsen-Freeman 2009:1f.; see also The Five Graces Group et al. 2009, Bybee 2010, Massip-Bonet & Bastardas-Boada 2013). Framing language in this way aligns it with other complex adaptive systems from which parallels can be drawn. Do these systems evidence internal changes akin to *be like*?

In fact, there are biological, chemical, physical, social, historical, economic, and political events that have a similar profile. They are sudden (generally negative) or extended (generally positive) happenings and developments (Taleb 2010:44f.). Examples from humanities and social science include the internet, social media, September 11, and the market crash of 2008. These and others like them have been called black swan events (Taleb 2010). A black swan is an outlier. Nothing in the past could have pointed to its likelihood. Inductive reasoning cannot calculate it. Until a black swan actually happens, its occurrence lies outside the realm of possibility. Black swans are a surprise. They carry extreme impact. They change something irrevocably. But they can be rationalized by hindsight, making them ‘explainable and predictable’ (Taleb 2010:xxii). The ability to construct retrospective plausibility causes ‘a discounting of the rarity and conceivability’ of the event (Taleb 2010:10). This convergence of characteristics ultimately defines a black swan. The validity of the black swan event may be debated, but all systems ineludibly contain them—events that cannot be predicted.

The black swan event is a metaphor that fits the facts of *be like*. The idea that ‘asymmetric (i.e. atypical, unexpected) outcomes need to be taken into account’ (cf. Lee 2012) is something that can profitably be used to understand this particular linguistic change. Language is systematic, constrained, regular, and probabilistic, but it is not entirely predictable or deterministic. This makes language, like other complex adaptive systems, susceptible to black swan events. In its historical form, the challenge that a black swan poses is the difficulty of generalizing from available information (Taleb 2010:49). Now, consider *be like*. Its simultaneous, instantaneous, parallel development, in multiple urban locations, at the same time, from a novel collocation within a coherent system, could not have been predicted. Its emergence and development have completely changed the way stories are told. And it is now the majority form for speakers born after 1970. It has the same ‘winner takes all’ profile of changes in adaptive systems that are vulnerable to black swans (see Taleb 2010:36, table 1). And finally, if we try to rationalize *be like* in retrospect, it is possible to construct a credible social and linguistic explanation (see §5). Indeed, we could have concluded our analysis with just such a positivist interpretation, making this study conform to and align with other studies of *be like* in the literature.

But this line of argumentation is precisely the problem. We have been analyzing and reporting on *be like* as though it were predictable and explainable, blinded by our own conventional theorizing, what Taleb (2010) has metaphorized as the ‘ludic’ or ‘narrative fallacy’. While the majority of linguistic changes can be accommodated using the uni-

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9 The black swan event is not to be confused with catastrophism, which refers to origins (not ongoing possibilities) and rules out adaptation (see Labov 1994:21), nor is it an event that is precipitated by warning signs (see Holton 2014).
formitarian principle, we submit that something more is required to account for outliers. Variationist sociolinguistics and historical linguistics have studied linguistic change for many years. A great number of forms and patterns have been documented, enabling the construction of viable, useful, and progressive theories of how change progresses in language. Trudgill (2011) noted changes in the nature, size, and external interactiveness of communities and predicted a qualitative change for the future of human language. Indeed, the social context in which linguistic change must necessarily be situated has transformed. While the biological attributes of human beings (brain size, vocal tracts, auditory perception) have not changed, the world has. The global ecology has become exponentially more complex than at any other time in its history (Diamond 1997). As a consequence, the possibilities for linguistic change have undergone analogous adjustments (Croft 2003:23). Just as ‘sources of Black Swans today have multiplied beyond measurability’ (Taleb 2010:61), language has tipped over the threshold of a new era as well. Language scientists have discovered and documented innumerable ‘white swans’, but now something has come into being that is outside the box.

We suggest that be like is a linguistic black swan, at least, the first recognized linguistic black swan. A linguistic black swan event, with its element of randomness and nonlinearity, offers a defining new confirmation of language as one of the suite of complex adaptive systems, along with economics, science, engineering, and others. A linguistic black swan shows us that language embodies random events as well as predictable structure, and demonstrates how language too is adapting to the contemporary world situation. If we are right, it will not be long before another black swan emerges.

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