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Futuretalk: one small step towards a Chronolinguistics

Peter Stockwell

1 The precedent of *psychohistory*

Set initially in the year 12,069 (Galactic Era), on the planet Trantor near the galactic centre, Isaac Asimov's *Foundation* trilogy tells the story of the rise and fall of an interplanetary empire and the social scientists who negotiate its evolution through the dark ages. They are able to do this thanks to a mathematical formalisation of social theory invented by Hari Seldon and called 'psychohistory':

PSYCHOHISTORY—... Gaal Dornick, using non-mathematical concepts, has defined psychohistory to be that branch of mathematics which deals with the reactions of human conglomerates to fixed social and economic stimuli. ...

... Implicit in all these definitions is the assumption that the human conglomerate being dealt with is sufficiently large for valid statistical treatment. The necessary size of such a conglomerate may be determined by Seldon's First Theorem which ... A further necessary assumption is that the human conglomerate be itself unaware of psychohistoric analysis in order that its reactions be truly random. ...

The basis of all valid psychohistory lies in the development of the Seldon Functions which exhibit properties congruent to those of such social and economic forces as ...

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(Asimov 1953: 16, original ellipses)

Psychohistory, in this science fiction novel, amounts to social prediction based on formulated principles of social change. Though the passage above is carefully ellipsed at crucial explanatory moments, psychohistory involves a statistical projection that claims predictive accuracy. Though a fictional science, psychohistory here encompasses two principles of real social science: the observer's paradox and the principle of provisionality. Firstly, the population must not be aware that they are being observed, as this self-consciousness will affect their behaviour and thus change the data. Secondly, it is assumed that psychohistory cannot be absolutely accurate over time, and its findings must be regarded as provisional 'truths' to be revised in the light of incoming real historical data. In other words, the prediction is 'actualized' as the future becomes the present; in the novel, the 'Foundation' is set up to monitor these adjustments.

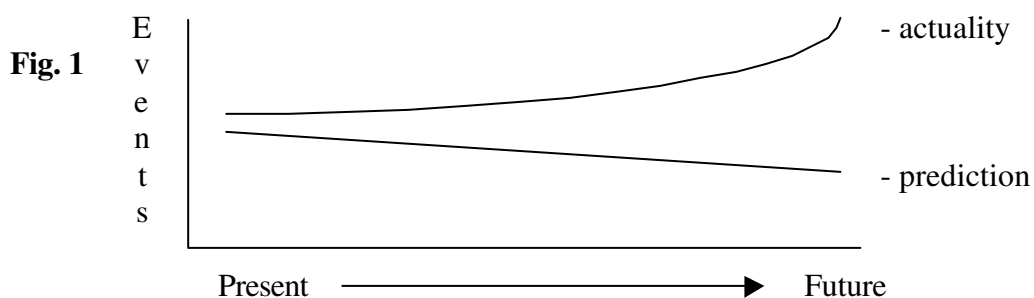
Psychohistory awaits considerable advances in cultural theory, sociology and mathematics, as well as in socioeconomic computer modelling. The more modest aim of this paper is to focus only on the language of the future, and to establish the first principles of the study of future language possibilities. I call this embryonic discipline *chronolinguistics*.

Chronolinguistics is an inter-discipline with its roots in three areas: historical linguistics; sociolinguistics; and futurology. The first two of these have obvious relevance. Indeed, the philological formulation of sound-change principles and subsequent application to a range of linguistic and dialectal situations can be seen as identical to the predictive method in chronolinguistics. The last of these disciplines – futurology – perhaps needs a brief explanation. ‘Futurology’ covers both sociological extrapolation of the sort produced by Toffler (1970, 1980, 1990, 1995), as well as science fiction that is primarily extrapolative in its fictional world (rather than merely alternative or speculative for satirical purposes – see Littlewood and Stockwell (1996) for these distinctions). In general, it is important to distinguish these forms of science fiction, since they require different approaches to an interpretation of their worlds: one as futurology and one primarily as art. Futurological extrapolation was popular in early science fiction, such as H.G. Wells’ (1933) *The Shape of Things to Come*. This category encompasses both utopian (generally 19th century socialist) and dystopian (generally 20th century political and often feminist) science fiction.

Non-futurological science fiction (or ‘artistic’ SF) is more symbolist in the sense that it treats the future as a metaphorical world primarily for critical reflection on the present. Characters in SF are often not individuals but ‘everyman’ tokens, and the language they use symbolises the culture they inhabit. SF doesn’t often deal directly with language; when it does, it can be treated as a technology to be extrapolated and as an index of social change (see Stockwell 2000). It is the latter sort of SF that is most useful for chronolinguistics: where social form and linguistic function are placed in a corresponding relationship with each other.

2 First steps in chronolinguistic theory

Is chronolinguistics possible? My answer to this would be that the achievement of a workable chronolinguistics is very difficult but not impossible. The first task is to decide upon a criterion for measuring the accuracy of chronolinguistic prediction. The intuitive assumption is that predictions are reasonably accurate in the short term, and become more and more divergently inaccurate as time goes by; furthermore, that this divergence is exponential, as factors leading to inaccurate predictions multiply each other over time. Fig. 1 graphically represents this.

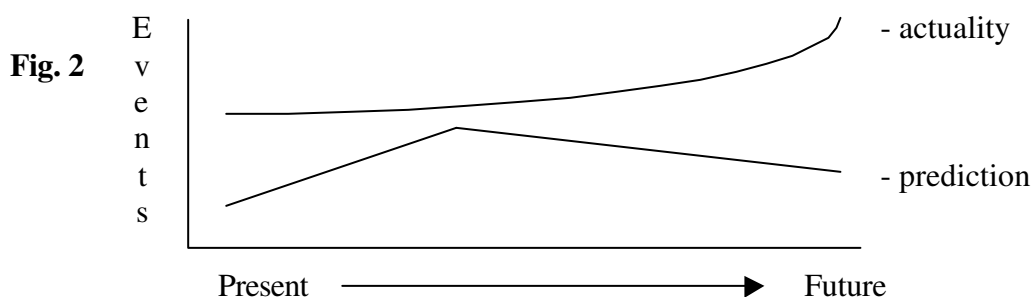


A little thought, however, indicates that the assumptions embodied in this projection may be wrong. In the short term (a period of up to 20 years into the future), language usage is likely to be very similar to the present. Any changes are likely to be minor and unpredictable because they are too local. For example, amongst my own students every few years, a new faddish word sweeps through the population and is used by students for a year or two, before it is then lost and replaced by another faddish word. In the mid-1990s, this word was 'pants', used adjectivally as a pejorative term: 'this film is pants'. Today, most of my current students no longer use this word; pointedly, it is now current amongst late twenty-year-olds and thirty-somethings (the original users now a little bit older) and is unsurprisingly having a resurgence in current advertising campaigns mistakenly aimed at a 'youth' market that has moved on. The word that my students have moved on to is 'random', used as a non-committal response or expression of vagueness: 'Are you coming out tonight' – 'Oh, random'.

The point here is that I can confidently predict that there will be a new faddish student word in a few years time, but I cannot possibly predict exactly what that word will be. The general pattern is predictable with a reasonable degree of confidence, but the specifics are not. This gives us our first principle of chronolinguistics:

The general is more predictable than the specific.

That is, global-scale and macro-sociolinguistic factors are easier to predict accurately, than, say, more particular discourse practices or dialectal innovations and shifts, and in turn these are more predictable than individual lexical innovations or jargon or in-group register or idiolects. The last of these represent absolute specificity and are thus almost impossible to predict. This means that close-range prediction is likely to be inaccurate because it is necessarily too specific. Long-term prediction is likely to be highly divergent from actuality as suggested above. The greatest accuracy, then, is likely to be in the medium term: defined here as the period of the future between 20 and 100 years. A more accurate representation of the confidence of chronolinguistic prediction is conveyed by Figure 2.



I can draw an illustrative example from my own experience. For the past few years, I have acted as the publicity and membership officer of the Poetics and Linguistics

Association (PALA), an international scholarly association with members in over 50 countries worldwide. All communications in the society are channelled through me, almost exclusively by email, and this has given me a valuable insight into a form of electronic-medium language which is developing: a sort of emerging 'World Standard Electronic English'. Currently, 80% of the world's internet traffic decodes from transmitted bits into screen manifestations in English. In spite of recent developments in making keyboards and webpages more friendly to scripts and fonts such as Cyrillic, Hellenic, Chinese, Japanese and Thai, nevertheless English and the western alphabetic script remain the dominant forms of the internet.

The well-known patterns of email discourse that blend features of speech and writing can be seen in most of the email utterances that I receive: I therefore suspect that my experience is typical. Patterns of informal register, conversational tags and idioms, dashes and parentheses indicating unplanned discourse, and a high tolerance of orthographic and syntactic 'errors' all indicate the provisionality of email that is usually more associated with face-to-face dialogue than with written forms. The fact that this form of discourse has arisen recently and rapidly, and is used more by young people than older people, and is more like speech than writing, all suggest it is likely to be more dynamic and protean than other forms of language. It is the perfect microcosm for studying linguistic innovation and change.

Because of American economic dominance over the internet (which of course also accounts for the dominance of English there), it might be expected that the patterns of World Standard Electronic English (WSEE) would be drawn thoroughly from American English. In fact, my own observations seem to suggest that WSEE is a sort of 'common ground' form. Email 'speakers' deliberately avoid any obvious regionalisms, such as lexical choices or syntactic constructions which are pointedly or consciously regarded as local or national variants. Speakers avoid culture-specific references and idioms, or where they are used they are often accompanied by dashes and explanatory comment that makes it clear that the usage is regarded as a code-switch into a regionalism that requires qualification. What is left is WSEE.

The emergence of this default form as a global standard has been accompanied by an increase in the dialectal repertoire of email speakers. Email communications within the culture, speech community or even within the same institution, retain as many regionalisms and local usages as would spoken interaction. I have observed this at first hand not only in my own practice, but also on the few occasions when, by virtue of bugs in other users' distribution lists, I have been accidentally sent the internal messages of colleagues in other universities around the world. The striking thing about these accidentally eavesdropped conversations is how different they are from the form of messages sent outside the institution, in WSEE.

It seems that WSEE will continue to be refined over the next decade or so, but it will be interesting to see the specific changes which, I predict, must occur when the keyboard is replaced by speech as the primary input device for electronic communication.

2.1 The principles of linguistic change

Ancient commentators on language used to equate linguistic change with national degeneration, moral corruption or mongrelisation. Change was seen simply as the consequence of national invasion. Of course, while invasion often does affect language, specific changes are just as often seen to reflect existing trends or newly acquired political features. For example, the gradual loss of most inflectional suffixes in Old English was a process that was well underway and was merely accelerated by Viking and Norman French invasions.

Over the 20th century, English has moved into position as a post-national language. It is no longer co-terminous with any single nation-state, and is not even 'owned' by any one homogenous culture. In effect, the language itself has become uninvadable. Changes in World English can be seen to be largely due to the effects of two general factors: a general realignment that reflects social and technological evolution; and a local realignment when patterns come into contact with other linguistic systems. The former of these manifests itself in creation and innovation, and the latter shows up in borrowing (or, rather, 'copying') from other languages.

Aitchison (1981) has codified the principles involved in such copying:

- detachable elements are most easily copied (for example, Middle English imported many lexical items from French, but aspects of the tense system were not copied)
- copied elements have an existing superficial similarity (thus, words that have phonological clusters common in the copying language are more likely to be copied)
- copied elements are 'x-ised' (this can be seen in the 'anglicisation' of many foreign words, and also in other languages, such as the 'nipponisation' of words like 'hotel – 'hoteru', 'sunglasses – sunugurasu' and 'taxi – takkusi')
- a principle of 'minimal adjustment' operates: changes happen in small stages. It is this fact that allows trends to be extrapolated.

(after Aitchison 1981: 120-3)

The establishment of principles such as these demonstrate that chronolinguistics is a possibility. Principles formulated inductively on the basis of past evidence can then be used as predictive formulations when applied to the evidence of the present, and extrapolated into the future. Labov (1994) has developed his thinking in this direction, in his *Principles of Linguistic Change*. He points out that long-term stability is more puzzling than the fact of change, and the challenge for sociolinguists is to account for stability as well as change. In his discussion, he points to 'the Historical Paradox', which alludes to the fact that the more the past is studied, the greater the gaps in knowledge become apparent.

Labov invokes Christy's (1983) 'uniformitarian principle' in order to address the Historical Paradox:

knowledge of processes that operated in the past can be inferred by observing ongoing processes in the present

(Labov 1994: 21, quoting Christy 1983: ix)

This statement can be treated as a special case of a more general principle that applies equally to the future:

Knowledge of processes that operated in the past and will operate in the future can be inferred by observing ongoing processes in the present.

Labov points out that uniformitarianism is distinct from the religious-based controversy between gradualism and catastrophism; both are amenable to uniformitarianism.

In linguistics, we must be careful not to confuse a commitment to uniformitarian thinking with a commitment to gradualism.

(Labov 1994: 23-4)

He goes on to point out that catastrophic changes, such as dislocation of populations and political upheavals, generate external change (that is sociolinguistic) while gradualism manifests itself in internal change (more purely linguistic in nature). This combination is familiar to evolutionary science as 'punctuated equilibrium'.

Labov claims that the complexity of study in linguistic change can be addressed using a sort of 'triangulation' method:

Solutions to the Historical Paradox must be analogous to solutions to the Observer's Paradox. Particular problems must be approached from several different directions, by different methods with complementary sources of error. The solution to the problem can then be located somewhere between the answers given by the different methods. In this way, we can know the limits of the errors introduced by the Historical Paradox, even if we cannot eliminate them entirely.

(Labov 1994: 25)

2.2. The dramatisation of linguistic change

The key issues so far concern the extent to which change is social and predictable or idiosyncratic and chaotic. Science fiction provides examples of both aspects of change, and the genre also illustrates and dramatises the hard linkage between social change and linguistic change. In other words, language in science fiction is treated systemically, not as a 'random fluctuation system' or simply as chaotic fashion.

The usefulness of science fiction in chronolinguistics lies in its resistance to the Observer's Paradox. Science fictional worlds are created for reasons other than linguistic

study, and in this sense they can be seen to have the same status as naturalistic data. Of course there is a difference between those science fictional narratives that are primarily concerned with action-adventure and those which set out to construct a rich world. The former often have science fictional paraphernalia (spaceships, time-warps and bug-eyed monsters with exotic names), but their main concern is the thriller element, and the alternativity setting (futuristic or alien) is cosmetic. Such narratives rarely feature any linguistic comment at all: the future is English-speaking and universal translator machines patch over any inter-species communication problems. (Meyers (1980: 118) and Stockwell (2000: 48-53) discuss speculated technologies such as these from a linguistic perspective).

By contrast, richly detailed science fictional worlds present opportunities to the chronolinguist. Elsewhere (Stockwell 2000: 204-24) I have termed such richly imagined and detailed alternative worlds *architexts*. In architextual science fiction, a complex social fabric is presented, with a mass of intricate detail that goes far beyond the texture required simply to progress the narrative. Utopias and dystopias are the typical forms of architextual science fiction, and it is in these settings that science fictional extrapolation of alternative linguistic systems is most commonly found. Crucially for chronolinguistics, marked issues of language change or alternativity are present *both* as a signal of the alternativity of the imagined world and also as the means by which that world is realised for the Earth-bound reader. Linguistic alternativity is thus a complex indicator of the architext.

Science fiction, not being constrained to our reality, contains many thousands of alternatively configured worlds. There are of course continuities and patterns of common mythology across many of these worlds: there can even be said to be a consensually agreed version of what the future will probably be like, in much science fiction. Certainly there is a cinematic default version of the future, which has even influenced the names and development of real current and prospective technology. Overall, then, there is a dense cluster of science fictional worlds in the area of 'minimal departure' from our own present, with fewer speculations moving off to the wilder shores of radically different or unique worlds surrounding this conventionalised core. This distribution of alternative versions of the future means that science fictional architexts overlap and offer a continuum that then means it is more likely that aspects of the actual future have been covered or approximated in some of them.

For example, both catastrophic change and gradual change have been used to configure serious science fictional architexts. In Russell Hoban's (1982) *Riddley Walker*, catastrophic social disjunction corresponds with radical linguistic change. The narrative is set in a future long after a nuclear war has destroyed what we know as Kent in the south-east of England. The novel is told in the first person by the eponymous character, 'written not even in proper English but in a broken-up and worn-down vernacular of it' (Hoban 1982: flyleaf). Here is the opening:

On my naming day when I come 12 I gone front spear and kilt a wyld boar
he parbly ben the las wyld pig on the Bundel Downs any how there hadnt

ben none for a long time befor him nor I aint looking to see none agen. He dint make the groun shake nor nothing like that when he come on to my spear he wernt all that big plus he lookit poorly. He done the reqwyrnt he ternt and stood and clattert his teef and made his rush and ther we wer then. Him on 1 end of the spear kicking his life out and me on the other end watching him dy. I said, 'Your tern now my tern later.' The other spears gone in then and he wer dead and the steam coming up off him in the rain and we all yelt, 'Offert!'

(Hoban 1982: 1)

It is worth quoting my analysis of this passage at length:

The non-standard future English used here is based on a range of features from traditional rural southern vernacular, such as 'dint' for 'didn't' and 'He done' for 'He did.' The minimal use of written conventions such as punctuation, the high use of conjunctions ('and'), and sentences that are not fully realised clauses ('Him on 1 end of the spear...') all serve to suggest a spoken monologue. The many simplified spellings ('ther', 'wer', 'agen') are usually indexes of a lack of education in the writer; here in this futuristic context they signal a simple-minded perception. The writing is full of conversational tags ('any how'), and spelling pronunciations ('teef,' 'kilt,' 'parbly') which possibly indicate a return in the southern accent to rhoticity [...] In English accents at least, such rhoticity is associated with rural areas, and there is unfortunately still a widespread common stereotype of speakers with such accents as being simple in outlook and uncivilised.

The opening passage quoted above is accompanied by a hand-drawn map of what is now Kent, with place-names that reflect both the catastrophic disjunction in language and the brutalised society that now exists: 'Do It Over' (Dover), 'Sams Itch' (Sandwich), 'River Sour' (Stour), 'Bernt Arse' (Ashford), 'Bollock Stoans' (Birchington), 'Horny Boy' (Herne Bay), 'Widders Bel' (Whitstable), 'Fathers Ham' (Faversham), and so on. These forms reflect the predominance of spoken forms over written conventions, such as the elimination throughout the novel of the possessive apostrophe ('s). They also reflect current stigmatised pronunciations, towards the current local vernacular, but extrapolated further. Thus 'Canterbury,' often now pronounced with a glottal stop for the medial /t/ in casual speech (/kaʔəbri/), is in the novel further ellipited to a sustained nasal: 'Cambry'.

In a detailed piece of stylistic analysis, Schwetman (1985) points out further historical changes such as the simplification of voiced dental [d] to a general unvoiced [t] to indicate past tense ('kilt', 'ternt', 'clattert'). Terminal consonant clusters are simplified ('ben', 'groun'), and folk-etymologies reflected in spellings (later 'tack ticks'). Schwetman calls this 'Post Modern English', and suggests that it has the flavour, if not the

precise specifics, of medieval English, evoking a peasant people and asserting the regressive effect of the nuclear apocalypse.

(Stockwell 2000: 60-1)

Many apocalyptic science fiction narratives present a post-holocaust world in the form of a regression. The conservative features of language presented in *Riddley Walker* are matched with songs and rhymes that are recognisable distortions of current children's songs, with aspects of contemporary life (such as 'Punch and Judy' puppet shows) whose meaning has been lost, and folk-tales of distorted oral history, stories passed on by 'the tel women':

I said, 'Ben there a strait story past down amongst the tel women?'

She said, 'There bint no tel women back way back. Nor there aint never ben no strait story I ever heard. Bint no writing for 100s and 100s of years til it begun agen nor you wunt never get a strait story past down by mouf over that long. Onlyes writing I know of is the *Eusa Story* which that aint nothing strait but at leas its stayd the same. All them other storys tol by mouf they ben put to and took from and changit so much thru the years theyre all bits and blips and all mixt up'.

(Hoban 1982: 19-20)

In this extract, the features of existing southern rural vernacular are again in evidence: 'ben' and 'bint' as (originally Old English) forms of the copula; negative concord in 'bint no' and 'aint never'; variant past tense forms 'begun; and the orthographic representation of accent features such as final consonant cluster reduction ('leas', 'tol') and the London Cockney influence of 'mouf'.

The linguistic consequences of gradual change are apparent in William Gibson's near-future 'Sprawl' series. In these novels, a consistent architextual world is constructed, beginning with the classic *Neuromancer* (1984), and then building up more and more intricate details in *Mona Lisa Overdrive* (1988), *Virtual Light* (1993), *Idoru* (1996) and *All Tomorrow's Parties* (2000). Gibson has said that his language is an extrapolation of '80s Canadian biker slang. Into this he adds the format of modern brand and trade names and abbreviations to suggest a techno-capitalist future. A high proportion of direct speech throughout all the novels gives the reader an immersed sense of a future vernacular.

Molly was snoring on the temperfoam. A transparent cast ran from her knee to a few millimetres below her crotch, the skin beneath the rigid micropore mottled with bruises, the black shading into ugly yellow. Eight derms, each a different size and color, ran in a neat line down her left wrist. An Akai transdermal unit lay beside her, its fine red leads connected to input trodes under the cast.

He turned on the tensor beside the Hosaka. The crisp circle of light fell directly on the Flatline's construct. He slotted some ice, connected the construct, and jacked in.

It was exactly the sensation of someone reading over his shoulder. He coughed. 'Dix? McCoy? That you man? His throat was tight. 'Hey, bro,' said a directionless voice. 'It's Case, man. Remember?' 'Miami, joeboy, quick study.' 'What's the last thing you remember before I spoke to you, Dix?' 'Nothin'.' 'Hang on.' He disconnected the construct. The presence was gone. he reconnected it. 'Dix? Who am I?' 'You got me hung, Jack. Who the fuck are you?' 'Ca – your buddy. Partner. What's happening, man?' 'Good question.' 'Remember me being here, a second ago?' 'No.' 'Know how a ROM personality matrix works?' 'Sure, bro, it's a firmware construct.' 'So I jack it into the bank I'm using, I can give it sequential, real time memory?' 'Guess so,' said the construct. 'Okay, Dix. You *are* a ROM construct. Got me?' 'If you say so,' said the construct. 'Who are you?' 'Case.'

(Gibson 1984: 98-9)

Though there are several lexical items here that refer to items in an alternative reality, they are close enough extrapolations of our own world for us to be able to make good guesses as to their meaning in context. Gibson does this by often using existing lexis but compounded to produce apparently new words: 'temperfoam' is obviously a form of flexible mattress; 'micropore' must be a dressing material; 'derms' are some sort of skin attachments, and so on. Company names ('Akai', 'Hosaka') are used to convey the familiarity of the objects, and terms from existing computer terminology ('jack', 'ROM') are placed alongside new phrases ('personality matrix', 'firmware construct') which follow the same formation patterns that we are familiar with today.

Gibson's world is uncomfortably close to our own, and so the linguistic patterns of our own reality are only slightly 'tweaked'. He focuses on technology and economics as the central factors in the world he presents, and places enough context around the unfamiliar so as to dramatise the position of the reader as being already embedded in the world. The alternative world and its vernacular needs no explicit explanation, then.

2.3 An epidemiology of linguistic change

Borrowing a computing or biological analogy, language change has recently been understood as being epidemiological: that is, linguistic features such as words and sound changes, as well as cultural ideas and myths ('memes') can be seen as being

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transmitted like a virus. Two recent works have explored this analogy: Sperber (1996) and Gladwell (2000). Sperber, with specific reference to language and culture, describes some representations as being more 'catching' than others. Gladwell explores the question of why some phenomena move suddenly from being insignificant to becoming epidemics; he calls this moment 'the tipping point'.

Gladwell claims that small changes can have disproportionate effects, and that change does not happen smoothly but in stages, with one dramatic moment punctuating periods of stability (as Labov 1994 has described above). Determining when an idea will 'tip' depends on three general factors which Gladwell describes as:

- The Law of the Few
- The Stickiness Factor
- The Power of Context.

The first of these refers to the notion that certain communities of people contain 'connectors'. These are people who, for one reason or another, have influence in the group. One way that this can be measured in sociolinguistic terms would be by using Milroy's (1987) 'network strength score' as an index of the relative density and multiplexity of social network relationships. Bex (1996), for example, has deployed exactly this model in order to understand the cultural formation of literature, literary genres, and the process of canonisation by which certain groups' values are privileged and accorded prestige status. Gladwell (2000) claims that the anthropological work of Dunbar (1996, see also Dunbar et al 1999, and Runciman et al 1996) supports his notion that the optimum size for an influential social network is around 150 individuals.

The second of Gladwell's factors, 'stickiness', corresponds with Sperber's (1996) distinction between 'winning mysteries' and 'relevant mysteries'. These are the cultural ideas which win favour and are promoted, not because of any intrinsic merit, but because they satisfy a local social and individual relevance (the connection here with Sperber's more linguistic work is apparent at this stage: Sperber and Wilson 1986).

Finally, 'the power of context' seems to me the crucial element, and it is the factor which determines the form of application of the previous two. It refers to the complex cultural environment into which the innovative feature (linguistic or cultural) is introduced. In Gladwell (2000) and Sperber (1996), the delineation of context is largely an *ad hoc* matter, used after the interpretative moment to rationalise the event within the terms of the theoretical framework. However, an understanding of the richness of the contextual world of the innovation is crucial to our general understanding of linguistic change, for the predictive purposes of chronolinguistics. It is exactly this sort of richly described context that is offered by architextual science fiction.

3 First principles of Chronolinguistics

I am now in a position to propose the first principles of chronolinguistics:

- *the general is more predictable than the specific*
- *language is not a random fluctuation system*
- *most changes have complex causes rather than a single identifiable cause*
- *correspondence of projection and actuality is high in medium-term, lower in short-term, and lowest and diminishing in long-term*
- *the base repertoire of possible changes can be divided into:*
 - *articulatory phonetic*
 - *psycholinguistic*
 - *cognitive*
 - *culture clash*
- *all triggers are sociolinguistic*
- *standardisation promotes cross-cultural uniformity*
- *language loyalty promotes diversification*
- *the social network is the unit of determination for linguistic diffusion*
- *social form and linguistic function are integrated and inseparable*

The empirical testbed for chronolinguistic hypotheses lies in the fields of social speculation (futurology) and science fiction, where complex methodological investigation, in context, can be undertaken. Theorisation can then be validated or falsified by the actualisation of a state-of-affairs in the future, as the passage of time turns the future into the present. In this way, fiction becomes the laboratory of chronolinguistics.

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