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Half a century of relative monitoring. On the 1959 *which*-hunt in *Scientific American*

Arne Olofsson is a Professor of English at the University of Gothenburg, specialising in English grammar. Within that wide field, he has taken a special interest in relative constructions, for instance in his widely acclaimed, corpus-based dissertation from 1981, *Relative Junctions in Written American English*. In this article, he discusses the self-imposed regularisation in the journal *Scientific American* of the distribution of relative *that* and *which*.

Introductory

In the eyes of a non-native learner of English, one striking feature of English grammar is its generous set of relative pronouns and other relativizers and the freedom with which the members of the set can be selected. Unlike a language like German, which also has a great many forms of relativizers but where the choice is strictly governed by gender, number and case, Present-day English has very little of such constraints. From the point of view of economy, the system may seem generous to a fault. For instance, *that* and zero (i.e. omission of a relativizer, marked in what follows with \emptyset) used as pronouns, i.e. in nominal functions, may seem to be completely superfluous: They can always be replaced by *who* or *which*, at least as long as we disregard stylistic effects:¹

	that	
(1) The man	\emptyset	I met
	who/m/	

	that	
(2) The pen	\emptyset	I used
	which	

The same obtains, in principle, when the relativizer is the complement of a preposition, with the additional complication of the choice between two possible word orders when a *wh*-word is used:

	that	
(3) The man	\emptyset	I spoke to
	who/m/	
	to whom	I spoke

	that	
(4) The pen	\emptyset	I wrote with
	which	
	with which	I wrote

¹ Also, as long as we disregard the advice or orders given by computerized grammar checkers. See Olofsson (2005).

The traditional view has been that the *wh*-forms *per se* are more formal and belong to a higher level stylistically; this is particularly true about the constructions (the last variants in (3) and (4) above) where a preposition introduces the relative clause, the so-called “pied-piping” structure, which can only be used with *wh*-words.²

Previous work on variation

The variation in Modern English between relative markers (in particular the series *that*, *which* and zero) has been studied from a statistical point of view by a large number of scholars, e.g. Jespersen (1927:84), Quirk (1957), Huddleston (1971), Taglicht (1973), Olofsson (1981), Guy & Bayley (1995), Tottie (1997) and Van den Eynden Morpeth (1998). Statistics galore are thus available as *comparanda* from various categories of spoken and written English. My own first contribution, Olofsson (1981), was based on a larger material than what has been treated by others, taken from the written American English collected in the Brown Corpus, the pioneering work in corpus linguistics.

The which-hunt

Freedom of choice tends to invite prescriptive comments in style guides, and, as is well known, there have been and still are attempts made to regulate the choice between relative markers. It seems to have started with Fowler (1926:635), who suggested that there should be a division of labour between *that* and *which* in “defining” (= restrictive) and “non-defining” clauses, respectively, for the sake of clarity.³ Three decades later there appeared an American variant of his book, *American-English Usage* (Nicholson 1957), with Fowler’s wording unchanged. The recommendation seems to have been adopted by editors and spread through house-rules to be read and obeyed by contributors, for instance journalists.⁴

What I am going to present here, on the occasion of its fiftieth anniversary, is a case of restricted choice affecting a wide international readership, namely the house rules of the American journal *Scientific American* as regards the use of the relativizers *that* and *which* and some

² The preposition is viewed as having been dragged along by the relativizer to the front of the clause in a way reminiscent of the German folk tale about the pied piper in Hameln/Hamlin, who led first the rats and then the children of the town to their destruction.

³ Fowler (1926) was his first explicit recommendation, but he had mapped the situation in slightly less prescriptive terms 20 years before in Fowler (1906).

⁴ Jacobson (1989) discusses editorial influence in American newspaper language, reporting that for instance *The New York Times* in 1986 had eliminated subject *which* completely: the single instance in 50 issues occurred in a quotation. For one example of a handbook for journalists, see Bernstein (1958).

related matters. In the heading of the article I am calling it a *which*-hunt because the house rules in question have completely eliminated *which* from two major syntactic functions in restrictive relative clauses, viz. subject and object.

The present-day pattern in Scientific American

If someone set out to account for the behaviour of relative pronouns and other relative markers in English exclusively on the basis of the texts found today in the journal *Scientific American*, some of the rules would look like the following:

English has four overt relativizers with a nominal function: *that*, *which*, *who* and, sometimes, *as*. *Who* is the only pronoun that inflects: *whom*. The relativizer is sometimes suppressed (a zero construction).

The rules for the use of the individual relativizers are as follows: *As* is used with any kind of antecedent in restrictive clauses but only when the antecedent is modified/determined by *same* or *such*. *Who* is used with personal reference as subject in all types of clauses. The inflected form *whom* is sometimes resorted to for personal objects and preposition complements (obligatorily when the pronoun follows the preposition).

So far there would be nothing unusual about the rules formulated, but one would have to go on to say not only that *that* is used only with non-personal reference in the types of clause where it occurs, viz. restrictive and emphasizing clauses (*it*-clefts), but also that it is used **only as subject and object**. Phrases such as (5) and (6) are thus OK, whereas (7) is out, not in ordinary English but in *Scientific American*:

(5) a car that is fast

(6) the car that I bought

(7) the car that I was talking about

Which is used with non-personal reference only, and in non-restrictive clauses it occurs in all syntactic functions. In restrictive clauses, on the other hand, ***which* has only one syntactic function, viz. that of preposition complement**. On the basis of the house rules, (8) and (9), if occurring in a manuscript submitted to *Scientific American*, would thus be blocked as “ungrammatical” and changed, whereas (10) would be accepted.

(8) a book which is interesting

(9) the book which I bought

(10) the book in which I read it

Turning things around, the following rules thus apply in restrictive clauses from the point of view of syntactic functions: For subjects, *who* is the only pronoun used with personal reference and **that is the only pronoun used with non-personal reference**. For objects, still in restrictive clauses, with non-personal reference, there is variation between *that* and zero, with zero as the more frequent option. **An object in a restrictive clause is never realized as *which***.

There is one exception to the ban on *which*, and it applies to both subjects and objects: In those cases where the antecedent position contains nothing but a non-personal determinative (cataphoric) *that*, the relativizer *which* may be used so that repetition of homonymous items (*that that*) is avoided.⁵

For non-personal adverbials there is variation between *that* and zero, in addition to adverbs like *when* and preposition-phrase constructions, in the latter case with *which* following a preposed (or “pied-piped”) preposition. This is in fact the consistently used form of preposition phrase, whether the reference is personal or non-personal:

(11)... the spherical surface on which they live ... (SA1961:12:88).

Exceptions are so rare that they are best regarded as slips:

(12) ... the universe we live in ... (SA1981:12:114).

Comparisons

Grammarians with a keen eye for relativizers can immediately spot the carefully monitored, almost artificial character of the relative patterns in *Scientific American*. In the eyes of international readers, the style developed by the journal with regard to relative pronouns must be confusing, because it involves a consistent clash between registers. As is well known and as has been demonstrated in e.g. Olofsson (1981:119) on the basis of the Brown Corpus of American English, *that* and, for non-subjects, zero are associated with informality, whereas preposition + *which* is a trait of formal language (cf. Olofsson 1981:122).⁶ It is true that the texts in the

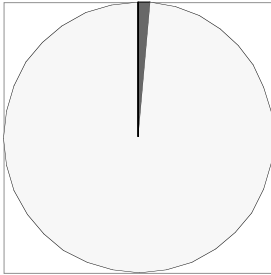
⁵ This is in line with one of the exceptions enumerated by Fowler (1906): “Euphony demands that ‘that that’ should become ‘that which’ ...”. See also note 8 below.

⁶ One sentence in the February 1959 issue must have created something of a dilemma for the editors: “... watched almost everything Ø he had collected or thought about ... burning ...”. The determiner *every* tends to favour zero very strongly, but the use of zero results in end-position (“stranding”) of a preposition, which the house rules forbid. Going by the book, the editors should have come up with “... everything Ø he had collected and about which he had thought ...”, but the stylistic clash would probably have been regarded as too strong.

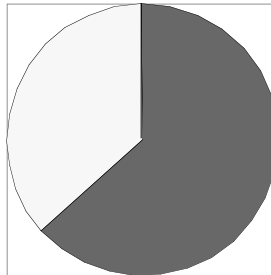
Brown Corpus have not been checked for the presence of monitoring, but at least it consists of material from many different sources and may therefore reflect a balanced mix of policies.⁷ The proportion there of subject *that* with non-personal reference in restrictive clauses is 73% in imaginative writings as against 50% in informative writings. In the most formal category within informative texts, Learned and Scientific Writings, the percentage goes down to 37 (Olofsson 1981:119). However, as already hinted above, in *Scientific American* from the last five decades (including the 1960s, the decade of the Brown Corpus texts), the proportion for this informal pronoun is consistently 100% (if we disregard the above-mentioned knock-out feature resulting in the combination *that which*). On the other hand, the highly formal construction preposition + *which* also holds a proportion of 100% (for all practical purposes) in relation to the competing construction with any relativizer followed by the preposition “stranded” at the end of the clause.

The following charts demonstrate how radically the choice of relativizers for the function of non-personal subjects in *Scientific American* in 1961 differs from Category J, Learned and Scientific Writings from the same year, as represented in the Brown Corpus.⁸

SA 1961: that 99%, which 1%



Brown J: that 37%, which 63%



This was the situation in 1961 but through the major part of the 1950s *Scientific American* had consistently shown the same pattern as the 1961 science texts in the Brown Corpus.

⁷ As demonstrated in Olofsson (2005), the scientific texts in the Brown Corpus, compiled thirty years later, must have been monitored very strongly.

⁸ Behind the figure of 1% for subject *which* there are two instances. One of them is of the knock-out kind that was mentioned above: “... and penetrates that which is most hidden ...”. In the other, the antecedent is *those*, which is also known to favour *which* in unmonitored English: “... those which produce the nuclear force field.” In other words, even 1% is a misleadingly high figure, since the editors did not have much of a choice in these cases.

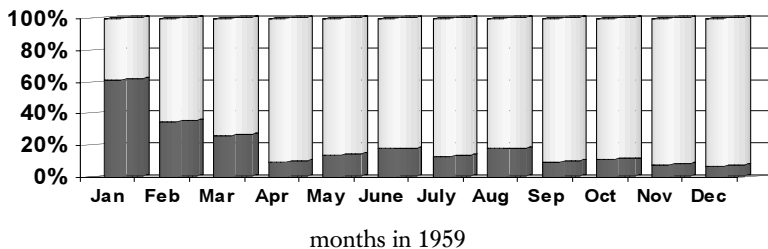
Historical aspects

When I became aware of the peculiar style of present-day *Scientific American* as regards relative pronouns, my first hypothesis was that it had to do with computerized grammar checking. Programs nowadays consistently reject relative *which* unless it is preceded by a comma, i.e. introducing a non-restrictive relative clause, and writers are recommended (or rather ordered) to substitute *that*.⁹ However, on closer examination, it turned out that the exclusion of *which* from the functions of subject and object in a restrictive clause goes back longer than the use of computerized grammar modules. In my investigation, the pivotal year has been disclosed as 1959. In 1958, there was variation between non-personal *that* and *which* for subjects and between *that*, *which* and zero for objects. In the course of 1959, usage was gradually regulated and by 1960, these variations had disappeared. The reform did not affect the rule that gives monopoly to preposition + *which* over constructions with the preposition “stranded” at the end of the clause; that rule has remained unchanged since the start of the journal in the middle of the 19th century.

The development during 1959

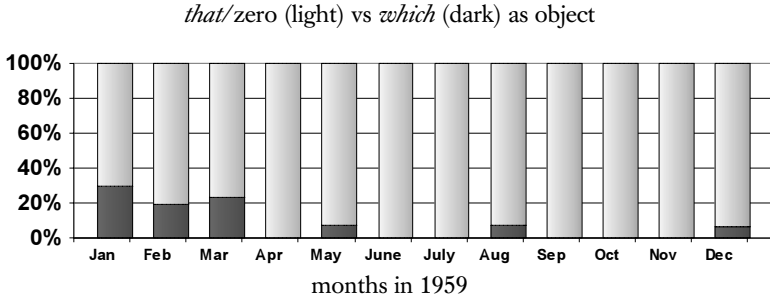
Now we know when *which* was banned from the functions of subject and object in restrictive relative clauses. We also know that it did not happen overnight because it is possible to trace a gradual process all through the year 1959 although the objective was in the main reached in the first four months.

The following chart shows how *that* gradually ousts *which* from the function of non-personal subject in restrictive relative clauses during the period January–April 1959 and how the balance arrived at after these four months is retained throughout the year. The January 1959 figure for *which* is exactly the same as for December 1958 (61%), whereas in the first issue of 1960 the proportion is down at less than 5%, which is lower than for any month in 1959.

that (light) vs *which* (dark) as subject

⁹ For effects in a diachronic perspective, see Olofsson (2005).

Correspondingly, the *that*/zero option ousts *which* from the function of non-personal object in restrictive relative clauses:



For obvious reasons, the statistics for subjects are better established than those for objects. One single month may be represented by nearly 100 relativized non-personal subjects but usually only by less than 20 objects. In absolute figures, the occurrences of object *which* in May, August and December number two, one and one, respectively.

A belated section on material and method

These are results that I have arrived at assisted by some third- and fourth-term students of English at the University of Gothenburg. In the first round of the project each student excerpted and analysed more than 500 relative constructions from the long feature articles in *Scientific American* from the years 1951, 1961, 1981 and 1991. The years were chosen so as to include 1961 for maximum comparability with the Brown Corpus. At the end of this first phase I had at my disposal a substantial bank of relative constructions from the period 1951 to 1991. On the basis of these results, the disappearance of the variation could be dated to a point within the period 1951–1961, so the second phase of the project was made to concentrate on 1953, 1955, 1957 and 1959. Each student was asked to excerpt and analyse the first 25 relative constructions in each of five feature articles in one issue from each of the four years, i.e. a total of 500 relative constructions. The texts, the excerption results and the analyses were submitted to me for double-checking. As mentioned above, no changes of the relative patterns were recorded until the first few months of 1959.

A case of language change?

If the phenomenon that I have described is to be termed language change, it must be noted that it is a long-term effect and a difficult one to demonstrate, but it involves both readers and writers. *Scientific American* has a very wide national and international readership, and readers who

are consistently exposed to the relative patterns in the journal are bound to think that this is what expository writing should look like. Prospective contributors will notice that any restrictive subject or object *which* they may submit in their manuscripts is changed into *that* and that any attempt at end-of-clause prepositions is consistently contravened. Gradually they may well adopt the style that they know will be the end-result anyway. *Scientific American* is by no means alone in this, as reported by e.g. Jacobson (1989:150), Tottie (1997) and Olofsson (2005). Colleagues of mine at the University of Gothenburg, native speakers of English, report that they have been quite upset by seeing their contributions to various American scholarly journals lose their high-status *which's* in favour of more colloquial *that's*.

A more limited effect has to do with the use of *that* in non-restrictive clauses. The general view of grammars is that, in principle, the pronoun *that* is used only in restrictive relative clauses. It seems that there has been a tendency for writers who did not want to commit themselves to either interpretation to use *which* in order to play it safe. In *Scientific American*, editors seem to regard *that* as the default form for the subject, which sometimes makes them come very close to using *that* in non-restrictive clauses. The cases I have in mind are characterized by indefinite antecedents multiply modified or specified in addition to the modification and specification brought about by the relative clause:

(13) ... I built a simple one-lens focused ion-beam system that could produce spots no smaller than ... (SA1991:10:077)

Future discussions of this phenomenon should perhaps more than has previously been the case take editorial house rules into consideration. The same goes for broad statements to the effect that American English differs from British English in preferring *that* to *which*.

Finally, a methodological word of advice to investigators of relative variation. If you are looking for natural and spontaneous variation rather than editorial policy, you should see to it that your corpus does not contain an undue proportion of strictly monitored texts. One example of a source that should be treated with circumspection seems to be post-1959 *Scientific American*.

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