The Conventionalization of the Passive in Late Modern Scientific English[1]

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Abstract

This paper is part of a larger project in which I seek to find out the reasons behind the radical decrease in the use of passives in Present-day English scientific discourse. After discarding a number of linguistic factors, my hypothesis is that passives are being elided because they have lost the pragmatic function which justified their high frequency in scientific discourse; they have become conventionalised in this text-type and, as any other linguistic feature which does not have a clear function in informative writing, are being suppressed. This paper tries to check this hypothesis by analysing the function of passives in scientific discourse before the change started to take place, that is, in Late Modern English. With data from *ARCHER* and other sources I will try to show that passives in LModE scientific English exemplify the conventionalisation of pragmatic strategies, a scenario that inevitably leads to linguistic change.

1. Introduction

This work belongs to a larger project which tries to uncover the reasons behind the decay of passives in Present-day scientific English. As I have shown elsewhere (Seoane, 2006), the frequency of passives with respect to transitive actives decreases radically towards the end of the twentieth century in written scientific discourse. Close

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examination of the linguistic factors that might determine such a change leads to the conclusion that none of them can be considered responsible for this ongoing change. Thus, the decay of passives cannot be attributed to an increasing colloquialization of English (Mair, 1998), or to the fact that the scientific discourse may be becoming more personal or subjective (Taavitsainen, 2002). The only factors apparently at work are sociocultural in nature, and concern the pressure derived from an increasingly competitive scientific market, which makes it necessary to design scientific discourse in such a way that it reaches a wide readership. The desired aims are no longer to create an objective and abstract kind of discourse which integrates pompous and elaborate linguistic devices, but to create a clear and accessible discourse. This urge to make scientific English more accessible, together with a widespread tendency to democratise discourse (Fairclough, 1992), would make it advisable to suppress all the linguistic traits which, while making it slow and elaborate, do not have a clear pragmatic function. My hypothesis is that passives, which were introduced in scientific English in the eighteenth and nineteenth centuries with the specific purpose of making it impersonal, detached and objective, have become conventionalised, i.e. thoughtlessly adopted merely because they add 'scientific flavour' to texts; they have become deprived of a specific pragmatic function, and therefore are being elided in informative writing.

In order to check this hypothesis I thought it useful to examine scientific English before the change started to take place, that is, in Late Modern English. I would look at individual scientific texts and analyse passives, one by one, and see if they were fulfilling a pragmatic or syntactic function that made them specially useful in Science or if, on the contrary, their high frequency in Science does not respond to a particular function. In the latter case, their presence would only be justified in terms of style, without any other specific syntactic or pragmatic role in Science. After examining the trees I thought it useful to also have a look at the forest, at the whole picture, and see the functions of the passive in science as compared to the function of passives in other formal and informal texts. This analysis would answer the necessary questions, such as: are most passives being used for the (impersonalising) purposes they are meant to fulfil in science? That is, are they used mainly with the purpose of avoiding reference to the

author / scientist? If they are, then their presence in science would be fully justified and therefore my hypothesis would be wrong.

If, on the contrary, the use of the passive in science does not fulfil a particular function that would justify its high percentage in scientific English in the nineteenth and early twentieth century, then we could claim that it is used for the same purposes as other text types, where the percentage of passives is considerably lower. Passives in this case would be conventionalised and ready to be lost in favour of a faster and more effective prose.

In this paper, therefore, I examine the pragmatic and syntactic functions of passives in scientific and other three text-types in Late Modern English, namely Law on the one hand, which has been singled out for its highly formal quality, like Science, and Drama and Private Letters on the other, selected for being tendentially less formal and closer to the spoken varieties of English. The data are mainly drawn from *ARCHER*, except for the legal texts, which are made up of extracts of laws and statutes, and which were specially compiled for this paper because this type of text is not represented in *ARCHER*.

I will describe first the frequency of finite passive constructions in the corpus and then explain the different functions that long passives –i.e. passives with an overt agent– and short passives –i.e. agentless passives– have in the different text-types, and finally I will draw some conclusions from the study.

2. Frequency of passives

My data predictably reveal a much higher proportion of passives in formal texts.

Table 1. Number of words examined, with indication of actives and passives and of relative frequency of passives with respect to actives.

	Law	Science	Drama	Letters	TOTAL
WORDS	25,008	25,952	31,985	29,138	112,083
PASSIVES	543(51.1%)	496(52.4%)	171(16.5%)	216(21.9%)	1,426(35.4%)
ACTIVES	520(48.9%)	449(47.5%)	862(83.4%)	767(78.0%)	2,598(64.6%)

Table 1 displays the number of words examined, the number of active and passive clauses found, and the ratio of passive constructions with respect to actives in each text type. The count of active constructions is restricted to those for which a passive counterpart would be available, that is, to those active transitive constructions with an overt object eligible to become passive subject.

Table 2 is more revealing: it provides the total figures for passives, actives and their relative proportions in both formal and informal texts. The difference is dramatic: while passives in informal texts amount only to 19.2% of all transitive clauses, almost 52% are passives in formal texts.

Table 2. Proportion of actives and passives in formal and informal texts

	No. PASSIVES	% PASSIVES	No. ACTIVES	% ACTIVES
FORMAL (Law + Science)	1,039	51.7 %	969	48.3 %
INFORMAL (Drama + Letters)	387	19.2%	1629	80.8%

This distribution of passives in the corpus was expected; the question is, do all formal and informal texts use the passive in a similar way? I will try to answer this question now by examining the function of passives in the four text types.

3. Functions of passives in the different text-types

As is well-known, the passive serves several purposes in the language. For example, as a member of the thematic system of voice, the passive performs two related functions: firstly, *subject backgrounding*, whereby the subject/topic of an active transitive clause is removed from the forefront of the clause, the prototypical topic position. Secondly, *object foregrounding* or *topicalization*, which involves promotion of a non-agent to subject and topic position.

Although subject backgrounding and object foregrounding can often be identified in one and the same passive construction, the subject backgrounding function is clearly more prominent in short passives and the object foregrounding one in long passives. Therefore,

the first step was to separate long from short passives, with the following results.[2]

Table 3. Number of short and long passives per text type (relative frequencies in brackets).

	Law	Science	Drama	Letters	TOTAL
Short Passives	461(84.9%)	463(93.3%)	159(92.9%)	194(89.8%)	1,277(89.6%)
Long Passives	82(15.1%)	33(6.6%)	11(6.4%)	21(9.7%)	147(10.3%)
KO	-	-	1	1	2
Total	543	496	171	216	1,426

On the basis of what the literature normally says, we would expect an association between formal text types and long passives, and between informal text types and short passives. In the data we do find this contrast between informal text types, with a low proportion of long passives, and Law, where the rate of long passives is higher. Science, however, is closer to informal registers in terms of the relatively low frequency of long passives; this might be considered the first sign that the passives Science contains do not serve the same purposes that they serve in other formal text types (which is normally to redistribute repeated information). I therefore decided to take a closer look at why agents tend to be elided in Science as compared to all other text types.

3.1. Thematic function 1: Subject backgrounding

I next studied each of these short passives to determine the factors conditioning the backgrounding of the agent in each case, as follows. The agent may be elided because it is (i) anaphorically predictable, (ii) stereotypical, (iii) irrelevant or unimportant, (iv) universal, unspecified, (v) the author of the text, (vi) unknown or (vii) cataphorically given. Table 4 provides the results.

[2] The knock-out contexts included in this table correspond to passive verb groups which do not admit an agent phrase because of semantic and/or syntactic constraints.

Table 4. Figures for short passives in relation to the factors that can trigger backgrounding of the agent.

	Law	Science	Drama	Letters	TOTAL
Anaphoric/cataphoric	43 (9.3%)	109 (23.5%)	69 (43.3%)	83 (42.7%)	262
Stereotypical	350 (75.9%)	71 (15.3%)	19 (11.9%)	36 (18.5%)	476
Irrelevant	67 (14.5%)	41 (8.8%)	42 (26.4%)	28 (14.4%)	178
Impersonal	1 (0.2%)	57 (12.3%)	16 (10.1%)	30 (15.4%)	104
Author	-	180 (38.8%)	7 (4.4%)	14 (7.2%)	201
Unknown	-	5 (1.0%)	5 (3.7%)	2 (1.0%)	12
K.O.	-	-	1 (0.6%)	1 (0.5%)	2
TOTAL	461	463	159	194	1277

Here we find again Law at one extreme, with a clear primary function for the elision of agents, and informal texts plus Science at the other, where the use of short passives responds to a wide variety of functions. In Law short passives predominantly fulfil the function of eliding stereotypical agents, which are normally either the authorities, or, less frequently, some other easily identifiable group or body. In Science, however, we do not find any such clear factor determining the high frequency of short passives. As already mentioned, the use of the passive in Science is normally justified in terms of the need for an impersonal style, but if this were true in our corpus we would expect to find an overwhelming majority of agents suppressed because they are the author of the text or stereotypical (other scientists). These two types of agents abound in scientific texts (cf. Table 4), but they are nothing like as predominant as stereotypical agents in law, and they are not the only factor at play, since anaphoric agents, for example, are also very frequent, as is also the case with Drama and Letters.

So far Science has proved to be closer to informal texts in terms of the proportion of short passives, which is low, and the functions they are used for.

3.2.Thematic function 2: Object foregrounding

Let us examine now the object-foregrounding function of the passive, whereby patients come to occupy initial topical position in the clause. Statistical data gleaned from cross-language investigations show that the eligibility of nominal topics depends on an array of syntactic, semantic and pragmatic factors. Several ordering hierarchies have been discussed in the literature. I have classified the most relevant of such hierarchies into the two following groups, based on semantic and pragmatic criteria. NPs with features figuring at the left of these hierarchies are the most likely candidates to become topics.

The Familiarity Hierarchies	
given > new (Table 5)	
definite > indefinite (Table 6)	
The Dominance Hierarchies	
The personal hierarchy:	human > higher animals > other organisms > inorganic matter > abstracts (Table 7)
The empathy hierarchy:	1st p > 2nd p > 3rd p
The semantic role hierarchy:	agent > recipient/benefactive > patient > instrumental > spatial > temporal

The last two factors – empathy and semantic role hierarchies – were disregarded since they either yielded figures that were too low or the results were totally homogeneous, with no difference between text-types. The analysis of the rest of the variables yields the results provided in Tables 5 to 7.[3]

[3] These hierarchies can only be applied to nominal constituents, and for this reason I had to exclude two long passives from Science and 30 from Law.

Table 5. Information conveyed by the subject/agent in passive clauses

	Law	Science	Drama	Letters	Total
Given/New	6	19	8	11	44
New/Given	17	2	-	-	19
Given/Given	24	4	2	5	35
New/New	5	6	1	5	17

Table 6. Relative degree of definiteness of subject and agent

SUBJECT MORE DEFINITE THAN AGENT	7	12	6	15	40
SUBJECT LESS DEFINITE THAN AGENT	20	7	2	-	29
SUBJECT EQUALLY DEFINITE AS AGENT	25	12	3	6	46

Table 7. Human and animacy features of the subject and agent

	Law	Science	Drama	Letters	Total
+H+A/-H-A	5	2	3	4	14
-H-A/+H+A	28	7	1	6	42
+H+A/+H+A	9	2	4	6	21
-H-A/-H-A	10	20	3	5	38

If we consider first the results of the corpus as a whole, we see that all factors play a role in determining the use of long passives except one, namely the animacy of the subject and agent (cf. Table 7). Thus, most passives serve the purpose of rearranging information into the unmarked given/new order (Table 5) and they use the passive also to topicalise NPs which rank higher in the definiteness hierarchy (Table 6).

If we consider the text types individually, we see that the results hold true for informal texts and Science, but not for Law. Again, Science sides with informal texts as regards the use of the passive. In legal texts most long passives run counter to the universal cross-linguistic tendencies expressed in these hierarchies, by promoting subjects which exhibit non-topical features, namely being new, non-human and indefinite, at the expense of topical agents, which are given, human and definite.

3.3.Syntactic function: Syntactic weight

One last factor that might determine the choice of the passive is the Principle of End weight, according to which long, heavy constituents

tend to occupy the final position of the clause. If agents, despite being topical, are considerably heavier than patients, they will certainly trigger the use of the passive. So I analysed this variable, as shown below.

Table 8. Relative length of subject and agent in passive clauses

	Law	Science	Drama	Letters	Total
Subject longer than agent	14	7	3	1	25
Agent longer than subject	30	20	6	11	67
Subject and agent with same length	8	4	2	9	23

The data in Table 8 show that passives in the corpus also respond to the principle of end weight, in approximately equal proportions.

So, summing up, several pragmatic and syntactic factors have been found to play a significant role in late ModE passives, namely the given-new ordering of information, the degree of definiteness of the subject and the *by*-phrase, and the Principle of end weight. This applies to informal text types and also to Science but not to Law.

4. Conclusions

The conclusions from this study seem to suggest as follows:

In informal text types passives are infrequent and their use responds to a variety of functions, the most frequent being to background an agent that is anaphoric, irrelevant or unidentified through short passives. Long passives are also found and their use follows the universal tendency to topicalise patients that are more given, human and definite.

As for formal text types, passives are very frequent in both Science and Law, since more than 50% of transitive clauses are rendered in the passive voice in both. An analysis of their use, however, yields radically different results.

On the one hand Science does not seem to have one overriding functional reason for adopting passives, but rather a variety of functions, and in that sense it resembles informal text types. But, as mentioned, it is in terms of frequency that the difference between

Science and informal texts clearly emerges: over 51% as opposed to less than 20%. The conclusion we can derive from this is that if there is no particular or overwhelming functional motivation for the highly frequent use of passives in Science, the motivation must be purely stylistic, and by this I mean that the original function they were introduced in Science for is no longer present. If they are used it is because they have become part of the conventions typical of scientific discourse, like nominalizations or complex sentences. A scenario like this, where the discourse is full of passives which are not strictly necessary, is a scenario ripe for change. We must remember that several linguistic experiments have shown that passives take longer to produce and process, and therefore they make discourse slow and more difficult. If there is not a particular function justifying their high proportion (more than 50% of transitive clauses) it is only natural that they perish in a situation where scientific English has to be highly effective in order to get a wide readership in a very competitive market, and to reach a wide spectrum of readers, so that science becomes more democratic and not the privilege of a few.

As for Law, the use of short passives is functionally justified since they are generally triggered by the need to suppress stereotypical agents. The picture for long passives, however, is different. Their use contravenes all the tendencies attested for other genres of English and can only be justified from a stylistic perspective. We should, of course, bear in mind the specificity – not to say eccentricity – of legal English with respect to other text types: not only is it highly formulaic, its markedly fossilised nature was already apparent in the texts of 1700. Some of these fossilised formulae, such as enactment clauses in the UK, are still in use, unchanged, today.

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