Latin has a fair amount of allomorphic alternation between s and r: nefás / nefarús ‘imply’, flōs / flos ‘flower’, ārā / ārāsus ‘burn’, querē / querēsus ‘ask’, estē / estērī ‘be’ (pres./fut.), and so on. Earliest Latin documents, and documents in closely related languages or dialects, show further that many of the r-forms originally had s: a fact confirmed by comparative evidence from other Indo-European languages. Forms like fōs, tūsus, and estē show that some s’s did not change into r’s (some forms, like miror ‘wonder’, always had an intervocalic r); the evidence shows that s > r only in intervocalic position. We can now state the law:

By about 600 b.c., Latin s between vowels became r (all s’s between vowels became r’s).

To emphasize that sound laws are historical events that occur at a certain time in a certain language under certain conditions, Edgar Sturtevant compared the above statement about Latin rhotacism to another possible hypothetical historical event, which he called “The Law of Waterloo”:

All Prussian soldiers six feet tall were killed in the battle of Waterloo.

The Latin law as formulated does not seem to be completely true, since there are still words with intervocalic s’s: dictus ‘divided’, causa ‘cause’, caesus ‘cut down’, visus ‘seen’; nisi ‘unless’, despō ‘desist’; and so on. Morphophonemically the first four words have s’s that are |d + t| (dictōra ‘divide’, vidēra ‘see’) + past passive participle ending -tus: scrip-tus ‘written’, amā-tus ‘loved’, etc.), and, in fact, Old Latin orthography shows a double ss in these words; for

example, causa. That is, at the time when intervocalic s changed, these words did not have s but ss, which later became short after long vowels and diphthongs. As for nisi and despō, they are compounds that apparently had not yet been formed at the time when s changed, and thus the s’s in question were word-initial: sf ‘if’, sīnō ‘allow’. These cases do not fall under the conditions of the law; they are Prussians not yet born at the time of the battle. Another set of words shows intervocalic s’s after short vowels without these two possibilities of explanation: asinus ‘donkey’, casus ‘hut’, rosa ‘rose’; genesis, basis. However, we can easily establish these as loans from other Italic languages and Greek. Hence these did not exist in the language at the time of the change; they are Prussians naturalized after the battle of Waterloo.

Thus the first formulation has withstand quite well the apparent discrepancies in Latin words showing intervocalic s’s. A more serious attack comes from two words: miser ‘miserable’ and caesarius ‘hair’. But note that here the environment of s is different, in that it is followed by an r. Now our law needs an additional clause:

except when followed by r.

These are Prussians under six feet tall and hence not subject to the law of Waterloo. According to this clause, the word for ‘sister’, soror, should be *zosor (compare sister, Skt sasvān). Here one notices that the s, which has, in fact, changed before a following r, is preceded by s earlier in the word. We must add a further clause:

except when also preceded by s.

In other words, this Prussian is six feet tall after all, although his posture appeared bent. Now the law covers the facts quite well. There is only one exception, nāsus ‘nose’. But one exception against hundreds of regular cases does not invalidate the law. In historical linguistics one always finds a certain number of unclear cases or irregular changes.

This and the English and French v ~ f case, as well as many of the following examples, will show how sound change creates morphophonemic alternation. Looked at from the point of view of analysis, they are examples of internal reconstruction, because internal reconstruction is based totally on morphophonemic analysis (§§ 10.7–10.17, Chapter 12).