In the course of the 19th Century, linguistics became seen as the example of a successful application of ‘exact’ methods within the humanities. This reputation was due mostly to developments with historical linguistics, in particular the reconstruction of Indo-European.
Linguistic research was also very influential on other humanities, and even on e.g. biology. Darwin, for instance, wrote (in *The Descent of Man*, 1871):

> The formation of different languages and of distinct species, and the proofs that both have been developed through a gradual process, are curiously parallel.

After this he mentioned no less than fifteen such similarities.
We find in distinct languages striking homologies due to community of descent, and analogies due to a similar process of formation. The manner in which certain letters or sounds change when others change is very like correlated growth. We have in both cases the re-duplication of parts, the effects of long-continued use, and so forth. The frequent presence of rudiments, both in languages and in species, is still more remarkable. The letter m in the word am, means I; so that in the expression I am, a superfluous and useless rudiment has been retained. In the spelling also of words, letters often remain as the rudiments of ancient forms of pronunciation.
Languages, like organic beings, can be classed in groups under groups; and they can be classed either naturally according to descent, or artificially by other characters. Dominant languages and dialects spread widely, and lead to the gradual extinction of other tongues. A language, like a species, when once extinct, never, [...], reappears. The same language never has two birth-places. Distinct languages may be crossed or blended together. We see variability in every tongue, and new words are continually cropping up;
but as there is a limit to the powers of the memory, single words, like whole languages, gradually become extinct. As Max Müller has well remarked: – “A struggle for life is constantly going on amongst the words and grammatical forms in each language. The better, the shorter, the easier forms are constantly gaining the upper hand, and they owe their success to their own inherent virtue.” To these more important causes of the survival of certain words, mere novelty and fashion may be added; for there is in the mind of man a strong love for slight changes in all things. The survival or preservation of certain favoured words in the struggle for existence is natural selection.
The perfectly regular and wonderfully complex construction of the languages of many barbarous nations has often been advanced as a proof, either of the divine origin of these languages, or of the high art and former civilisation of their founders. Thus F. von Schlegel writes: “In those languages which appear to be at the lowest grade of intellectual culture, we frequently observe a very high and elaborate degree of art in their grammatical structure. This is especially the case with the Basque and the Lapponian, and many of the American languages.”
But it is assuredly an error to speak of any language as an art, in the sense of its having been elaborately and methodically formed. Philologists now admit that conjugations, declensions, & c., originally existed as distinct words, since joined together; and as such words express the most obvious relations between objects and persons, it is not surprising that they should have been used by the men of most races during the earliest ages. With respect to perfection, the following illustration will best shew how easily we may err: a crinoid sometimes consists of no less than 150,000 pieces of shell, all arranged with perfect symmetry in radiating lines;
but a naturalist does not consider an animal of this kind as more perfect than a bilateral one with comparatively few parts, and with none of these parts alike, excepting on the opposite sides of the body. He justly considers the differentiation and specialisation of organs as the test of perfection. So with languages: the most symmetrical and complex ought not to be ranked above irregular, abbreviated, and bastardised languages, which have borrowed expressive words and useful forms of construction from various conquering, conquered, or immigrant races.
From these few and imperfect remarks I conclude that the extremely complex and regular construction of many barbarous languages, is no proof that they owe their origin to a special act of creation. Nor, as we have seen, does the faculty of articulate speech in itself offer any insuperable objection to the belief that man has been developed from some lower form.
Indeed, the discipline in this period started building explanatory theories in the modern sense: it postulated abstract concepts in order to explain a complex reality.

(Indo-European is an example of something which cannot be directly observed, and the processes which led from Indo-European to the modern languages have the same status. Yet, although there is still debate about many details, these things by now seem firmly established.)

The line of reasoning is very similar to that in modern branches of linguistics (even those which do not consider themselves direct heirs of this historical school).
Like almost all successful humanities (and sciences) at that time, linguistics was primarily a historical discipline: the search was for ‘historic laws’ which could explain how mankind could have got from one situation to the present one.

It may not be so strange that linguistics was successful as compared to other humanities: it is relatively easy to isolate the language system from other parts of human activity. This is true in particular for the ‘physical’ part of language, i.e. phonology/phonetics, which hence became the topic that was studied in most detail.

A problem: the ontological status of ‘language’ was unclear: what changes if language changes?
1. Other sound laws (possibly unknown).
2. Analogy with other forms which could explain seeming ‘exceptions’ to sound change (e.g. the similarities between Old English *feówer, *fif and Latin *quattoor, *quinque are not the result of a regular sound change from IE *kwetwer, *penkwe; rather, analogy has shown its face; one could say that there is internal pressure to let the language system indeed be systematic.
3. Loanwords from other (IE) languages from a later period may also make it seem that we are dealing with exceptions.
Jacob Grimm

- Jacob Grimm (1785-1863) was a philologist, folklorist and linguist, who of course is most well-known for the work he did (with his brother Wilhelm) on folktales and on a German dictionary.
- Next to this, Jacob was also a law scholar, but (most important for us) a linguist and discoverer of Grimm’s Law
“Nearly all my labors have been devoted, either directly or indirectly, to the investigation of our earlier language, poetry and laws. These studies may have appeared to many, and may still appear, useless; to me they have always seemed a noble and earnest task, definitely and inseparably connected with our common fatherland, and calculated to foster the love of it. My principle has always been in these investigations to under-value nothing, but to utilize the small for the illustration of the great, the popular tradition for the elucidation of the written monuments”
Grimm’s Law

- PIE *bʰ, *dʰ, *gʰ > *β, ṃ, γ > PGerm. *b, *d, *g (e.g. PIE *bher (cf. Sanskrit bhratr, Latin frater) > PGerm. *bro:þe:r)
- PIE *b, *d, *g > PGerm. *p, *t, *k (e.g. Latin dens - Du. *tand)
- PIE *p, *t, *k > PGerm. *f, *þ, *x (e.g. Latin pater- - Eng. *father)

Grimm’s Law was (also) discovered by the Danish linguist Rask.
Exceptions to Grimm

- It became soon clear that there were some problems for Grimm’s Law.
- E.g. the PIE word for *father was *pə₂teːr; the proto-Germanic word was *faðeːr.
- The first plosive neatly follows Grimm’s Law, but the second was an exception (should ‘really’ have been þ).
- The PIE word *bhraːteːr ‘broer’ on the other hand had developed ‘regularly’ to *broːpeːr.
‘Grammatischer Wechsel’ of Lottner (1862)

- PGerm. *werþ ‘draaien’, *warþ (‘hij draaide’), *wurd (volt. deelwoord)
Karl Verner (1846-1896)
Karl Verner considered himself an amateur in linguistics, although he became an extraordinary professor in 1888.

As a student, he became interested in the issue what explains the difference between ‘brother’ and ‘father’ (in Gothic).
Verner claimed that there had been a process in PGerm. turning voiceless plosives into voiceless fricatives in a certain position: intovocalically, after a stressless syllable.

The difference in stress had later disappeared in PGerm. (because stress is uniformly on the first syllable in this language), but we can still see it in Sanskrit (pitáː vs. bhráːtaː) or Greek (patéːr vs. práːteːr).

The differences between different forms of ‘turn’ can be explained by different stresses on the affixes.
### Chronological ordering

<table>
<thead>
<tr>
<th>PIE</th>
<th>*pə₂tē:r</th>
<th>*bhráːtē:r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grimm</td>
<td>*fəpē:r</td>
<td>*bróːpeːr</td>
</tr>
<tr>
<td>Verner</td>
<td>*fədeː:r</td>
<td>*bróːpeːr</td>
</tr>
<tr>
<td>Stress shift</td>
<td>*fádeː:r</td>
<td>*bróːpeːr</td>
</tr>
</tbody>
</table>
Notice that this system corresponds with the widespread belief that Sanskrit represents a really old stage of the language.

<table>
<thead>
<tr>
<th>Proto-Indo-European (PIE) (reconstructed)</th>
<th>Sanskrit (Skr.)</th>
<th>Ancient Greek</th>
<th>Gothic, Old English (OE)</th>
<th>Modern High German</th>
</tr>
</thead>
<tbody>
<tr>
<td>*bʰrātēr</td>
<td>bʰrātar-</td>
<td>φράτηρ</td>
<td>brōpar (Gothic)</td>
<td>Bruder</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(pʰraːteːr)</td>
<td>brōpor (OE)</td>
<td></td>
</tr>
<tr>
<td>*pətēr</td>
<td>pitār-</td>
<td>πατήρ</td>
<td>fadar (Gothic)</td>
<td>Vater</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(pa'teːr)</td>
<td>fæder (OE)</td>
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</tbody>
</table>
Diagrams

The brothers Grimm, Karl Verner, Junggrammatiker

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Some problems

- Later authors have noted some technical problems with this approach.
- E.g. the classical obstruent inventory should have been typologically marked (no voiceless plosives, but voiced aspirates).
- It is often believed that Grimm’s law was triggered by the shift to initial accent, which leads to an ‘ordering’ paradox.
- The stage after Verner and before occlusivisation has never been attested.
Verner’s paper shows that it is possible (and necessary) to account for *all* facts of natural language within linguistic theory, without accepting the fact that there are just ‘exceptions’ (we saw two weeks ago that people thought that this warranted the comparison to biology).

Maybe not all concepts have been well-developed, and there are problems, but we have a clear instance of a modern scientific theory (e.g. it is falsifiable in principle).

This clearly articulated point of view was seen by some as ‘dogmatism’.
(See for instance the following, which was still said about the dialectologist Theodor Frings (1886-1968) in the 1970s: “Mit dem Einbezug dieser dynamische Faktoren durchbrach Frings den Dogmatismus der Junggrammatiker.” The intention of this is positive: dialectology for a long time prided itself on being non-dogmatic: every word has its own history.)
Junggrammatiker and linguistic theory
Wenn wir daher von konsequenter Wirkung der Lautgesetze reden, so kann das nur heissen, dass bei dem Lautwandel innerhalb desselben Dialektes alle einzelnen Fälle, in denen die gleichen lautlichen Bedingungen vorliegen, gleichmässig behandelt werden. Entweder muss also, wo früher einmal der gleiche Laut bestand, auch auf den späteren Entwicklungsstufen immer der gleiche Laut bleiben, oder, wo eine Spaltung in verschiedene Laute eingetreten ist, da muss eine bestimmte Ursache und zwar eine Ursache rein lautlicher Natur wie Einwirkung umgebender Laute, Akzent, Silbenstellung u. dgl. anzugeben sein, warum in dem einen Falle dieser, in dem andern jener Laut entstanden ist.
A gap in Neogrammarian theories is that it was not always clear where in reality language change took place.

This was due to the ontological problem mentioned above: it is not always clear where ‘language’ was supposed to be (Neogrammarians abhorred ‘psychology’)

Furthermore, sound change may not be as blind as people in the 19th Century thought it was.
Sound change is not blind

a. it cannot create languages that are typologically bizarre. (All languages have voiceless plosive; spirantization of such plosives — the third case of Grimm’s Law – is known, but is not known to lead to a language without voiceless plosives.)

b. this is even true for implicational universals (‘if a language has $\alpha$, it will also have $\beta$’)

c. in some languages or language families we can observe ‘long-term drift’ (e.g. a tendency to open syllables in Slavic); there should be some factor explaining this apparent ‘teleology’