

The Twilight of a Medium:

Eduard Sievers and Sound Analysis

(Stefan Rieger, Bochum)

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I.

Of course, wire has its own (media) history. When, who, for what reason and by what process of metalworking the wire puller came into being, how it was achieved, the further differentiation of techniques, from labour-intensive methods of manufacture to industrial mass production – all this information would be a legitimate contribution to a museum of wire. Far removed from such a history of wire is the story of its use. That use is what bestows upon wire a career that, in addition to the expected wire cables and transformers, chain mail and superconductors, also includes less predictable aspects in the context of cultural semantics, thereby leading to Eduard Sievers and his »sound analysis«. To come straight to the point: The media history and the material history of wire would be incomplete without an account of its cultural spirit, and likewise without the inclusion of the social history of modern individualisation. In the flexibility of wire, the flexible design of the modern individual finds its material reflection – and the once promising philological method of sound analysis found its *raison d'être*. Because this mutual informing is a legitimate part of wire's history of knowledge, it should be briefly related here, along the lines of its use in the context of a new philology that detached itself from written texts and elevated the body and its communication to the focal point. The fact that its framework (that is, Sievers' technique of sound analysis) was itself only a flash in the pan in the greater scheme of knowledge, unable to establish itself as a lasting theory, in no way detracts from it.

II.

Near the end of the nineteenth century, thus at the time in which the differentiation between natural sciences and social sciences began, and with it the counting game regarding the number of academic or scientific cultures, the process known as »sound analysis« caused a stir among contemporary thinkers. Its inventor was the German medievalist and philologist Eduard Sievers (1850-1932). For Sievers, it was self-evident that both spoken and written language as defined by sound analysis conveys detectable traces of its roots in a living organism. Because this corporeal foundation is decisive for both the original creation and any potential reproductions, sound analysis seemed to represent the solution to an acute methodological problem inherent in the structure of the discipline of philology: It promised to offer the humanities, notoriously condemned as subjective, the status of objectivity. The chosen terminology (by which it was explained that although philology may be biased, its sound waves are objective) sought to establish proximity to the natural sciences, as a historiographic review relates:

»With the term ›sound analysis‹, Sievers deliberately creates a connection to the terminology of physical and physiological acoustics as established by Hermann von Helmholtz. The idea that such nomenclature would suggest an association between his investigations and the precise research of the natural sciences, which enjoyed widespread recognition, must have been a welcome thought.«¹

On the occasion of an explanatory lecture in 1924, Sievers particularly emphasised two points regarding his method.

¹ Meyer-Kalkus, *Stimme und Sprechkünste im 20. Jahrhundert*, *ibid.*, 95.

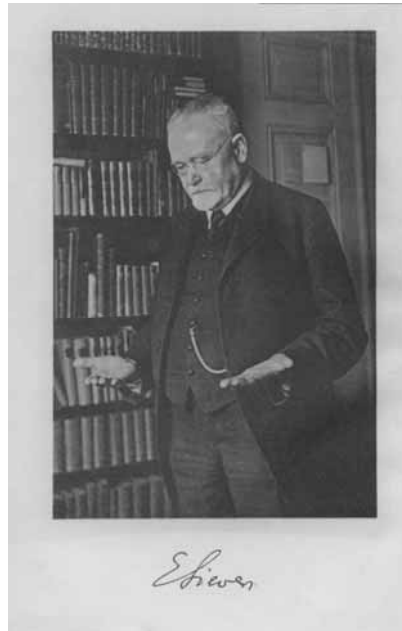


Fig. 1: Eduard Sievers beim Taktieren.

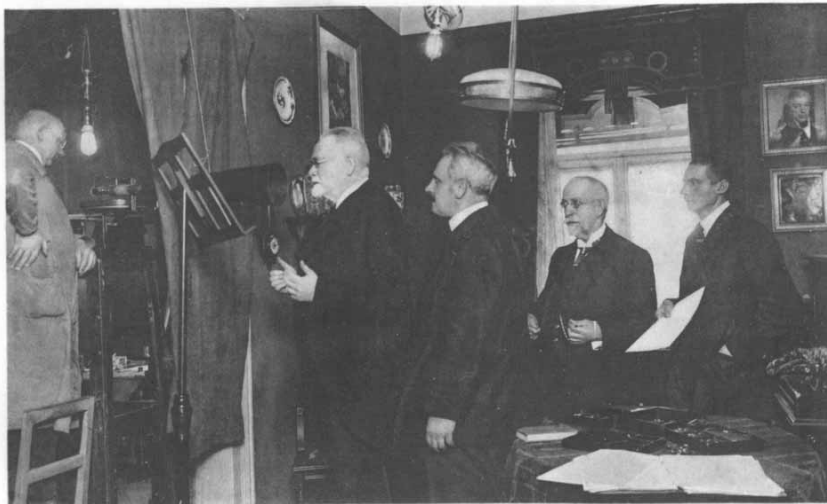
Nach *Germanica. Eduard Sievers zum 75. Geburtstag. 25. November 1925*, *ibid.*, n.pag.

»First: Sound analysis, with the help of systematically conducted psycho-physiological reaction tests will attempt to determine the psycho-physiological conditions under which formulated human speech materialises, and what (possibly unwritten) specific properties it accordingly possesses. It does not matter whether this concerns oral production and thus heard speech, or instead speech that only appears in written transmission, which must first be reproduced aloud before any proper investigation can be undertaken. Second: In both cases, sound analysis makes use of the resource of vocalised reproduction. Both that which is heard and that which is read by the eyes is repeated (or sung, etc.) – first instinctively, giving the impression that one has done this quite unconsciously, but then also in a conscious variation, such that one can thereby learn to observe and assess the degree to which this variation in the character of the recitation is altered.«²

Thereby, the phantasmal potential is defined and its basic features revealed. Language, whether spontaneously spoken or part of a faithfully followed tradition from some remote context of transmission, carries the indelible traces of the body of its speaker – or, in the latter case, both »speakers«: the speaker currently repeating the words and the one who produced them originally. Sievers considered this physiological legacy as a unique conceptualised

² Eduard Sievers, *Ziele und Wege der Schallanalyse. Zwei Vorträge*, Heidelberg 1924 (Sonderdruck aus der Festschrift für Wilhelm Streitberg: Stand und Aufgaben der Sprachwissenschaft), 65-111, at 70.

organism to be indisputable. And there are ways to objectively capture these regularities within the context of systematic experiments. This involves the so-called vocalised reproduction, by means of which sound analysts can determine the psycho-physical contingencies of every formulated discourse. Because it is presumed that the same path is followed regardless of whether the formulated speech is oral or written in form, the method is decoupled from the time-frame of the living body, and nothing stands in the way of its application to texts from the distant past. From the Bible to the Odyssey, from the Edda to Parsifal, the vestiges of the sound of spoken language are impressed upon the written text, beyond any graphemic representation of individual sounds.



LAUTAUFNAHME DER SIEVERS'SCHEN TYPEN.

Herrn Geheimrat Sievers zu seinem 75. Geburtstage in herzlicher Erinnerung an die Lautaufnahmen in seiner Wohnung, Frühjahr 1925. Wilhelm Doegen.

Fig. 2: Lautaufnahme der Sievers'schen Typen.
Herrn Geheimrat Sievers zu seinem 75. Geburtstage in herzlicher Erinnerung an die Lautaufnahmen in seiner Wohnung, Frühjahr 1925. Wilhelm Doegen [zit. nach Originalbeschriftung].
Nach *Germanica*. *Eduard Sievers zum 75. Geburtstage*. 25. November 1925, *ibid.*, n.pag.

A simple and presumably objective methodological technique would thus be able to determine something that is inaccessible to any kind of positivism in this form – a question of critical importance for philology, according to Sievers. The promise of such clarification in the face of highly uncertain data and dubious sources became a dramatic focal point of attention, stirring up a furore that reached far beyond the discipline of philology. However, arriving at that point (and thus ultimately justifying the necessity of my initial reference to wire) requires several intermediate steps and mediations. A certain presupposition interlinks

body and representation in a manner upon which the foundation of the method (both data-related and operational) is based.

»From more extensive investigation, it is indeed evident that every mental movement process can be projected outwards in the form of a corporeal companion curve, always in one curve alone, again a specific type to the exclusion of all other types, if one seeks to avoid inhibitions. Our individual considerations can also begin with these accompanying trajectories.«³

In this equalisation of generalisation, uniqueness, externalisation, and abstraction in the form of one (and only one) outward-projecting curve, the foundations for the further realisation are identified. The implementation of the method – that is, the vocalised reproduction – in its simplest variant consists of test subjects reading texts (or, in the broadest sense, performing) while their posture, movement, vocal interpretation, and other motor details are technically recorded using a multimedia apparatus combining a laryngograph, phonograph, and cinematograph. In the next step, the data collected on this vocalised reproduction (by means of its corporeal embodiment) come under the influence of the humanities and their various classifications, such as the many variants devised in the field of differential psychology. The classifications that Sievers drew upon modelled knowledge in the form of a so-called »personal curve«, as proposed by the musicologist Gustav Becking (1894-1945); these models are also referred to as »Becking curves«.

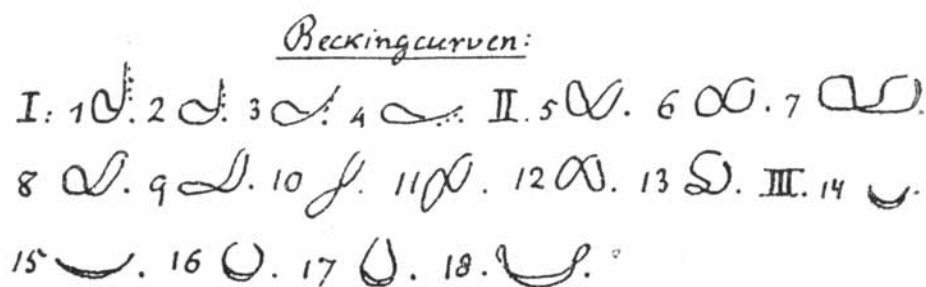


Fig. 3: Becking-Kurven.

Nach Eduard Sievers, *Ziele und Wege der Schallanalyse. Zwei Vorträge*, Heidelberg 1924 (Sonderdruck aus der Festschrift für Wilhelm Streitberg: Stand und Aufgaben der Sprachwissenschaft), 65-111, at: 73.

³ Sievers, *Ziele und Wege der Schallanalyse. Zwei Vorträge*, *ibid.*, 70ff.

For his part, Becking gathered these curves in the course of investigating musical rhythms and in subsequent exchanges with Sievers, who introduced Becking to his method in Leipzig. However, as is frequently observed under such conditions, the technique's objectives freed themselves from the casuistry of the original question, leaving behind the limited scope of musicological details in order to develop into something more profoundly fundamental. In its entirely immodest universalisation, the method proved to be nothing less than a closed system of knowledge.

In order to bring the perception of form and thereby wire into play, sufficient space must be provided for a much wider basis of operations. This happened with Becking with respect to two further protagonists, Joseph Rutz and Herman Nohl. Based on training techniques for singers, Rutz (a customs inspector and himself a singer) identified three physical postures that the body can adopt when reproducing the specific elements of a song or even those of a spoken text. On the basis of these types, which he presumed to be ahistorical in nature, Rutz developed a hypertrophic scheme of types; the scheme in its universalised form can be applied to basically anything and formed a highly respected part of the overall modern efforts of classification.










Der vorclassische Rhythmus in Deutschland					
Typus	Barock (kursorisch)		Aufklärung		
	Generation von 1580	Generation von 1680	Rokoko	Rationalismus	Sturm und Drang
I		 <p>Arm! Die Abstriche barock aus- höhlend Händel</p>			
II	 <p>Schulter! starr Schütz</p>	 <p>Arm! Gebunden schwingend Telemann</p>	 <p>Hand! Frei schaukelnd Hasse</p>	 <p>Ohne Schnörkel. Schlicht Ph. E. Bach</p>	
III	 <p>Schulter! starr M. Franck</p>	 <p>Arm! Die Abstriche barock aus- höhlend J. Seb. Bach</p>		 <p>Nicht aus- höhlend. Spröde Glück</p>	 <p>Ex- plosionen Stamitz</p>

Fig. 4: Beispielkurven aus der Historischen Tabelle der Schlagfiguren.

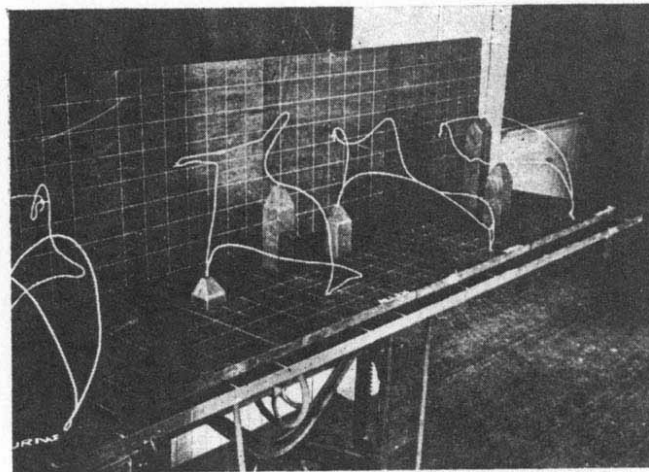
Nach Gustav Becking, *Der musikalische Rhythmus als Erkenntnisquelle*, Stuttgart 1928, 16.

Marketed by a resourceful family network, Rutz's type scheme managed to attract significant attention; the promotion of so-called »Rutz evenings« anticipated the popularised dissemination practice of the much later Tupperware parties. But these protagonists also strove to build connections to academic authorities, and thus their quest for legitimacy led Rutz and Nohl up to the heights of hermeneutic concepts – specifically, to Wilhelm Dilthey. With the aid of such sources (and the excessive imagination of the user), it should be possible to translate any epoch and ultimately entire worldviews in the form of curves.

As Sievers made clear in the two-point plan cited above, he sought to provide more than a mere description and classification, but rather objective proof of the actual effectiveness of these curves in the experimental reconstructions. For this purpose, cultural relics from literature or music first had to be formalised and verbalised. In order to describe the round and the pointed, circling and sliding, turning and rectilinearity in body movements within the context of the vocalised reproduction, he developed his own nomenclature with graphical

sigla that could adequately depict the forms of movement. Following the description and the graphical presentation, the final step involved material externalisation by means of a procedure that is now generally associated with the motion modelling using wire in the context of Tayloristic business economics, as found in the work of Frank B. Gilbreth. Taking advantage of the material's properties, the curves take on a representable form in the wire. Sievers availed himself of the functional flexibility of wire, translating the degrees of freedom appropriate for each respective curve into three-dimensional space.

»As you see, the signs [or signals] simply consist of bent brass wires, on the ends of which arrowheads are often (but not always) placed that exert a certain pull on the viewer.«⁴



STANDARD WIRE MODELS

What the phonograph has been to the music lover in standardizing and aiding the study of music, these wire models have been to the mechanic in aiding the study of skilled motion.

Fig. 5: Standard Wire Models.

Nach Frank Bunker Gilbreth, Lillian Moller Gilbreth, *Motion Study for the Handicapped*, New York 1920, face p. 16.

However, the rest of his demonstration lecture from 1924 quickly developed into a trite caricature of scientific principles. Naturally, Sievers called on his audience to participate, and that entailed the associated empathy. Despite this empathy and all the problems involved with the methodological discrepancy between the technique's alleged objectivity and the actual depths of subjectivity, the experimental attempt was expected to shed light on the complex form of data processing. To this end, the wire was finally operationalised, but the wire itself

⁴ Sievers, *Ziele und Wege der Schallanalyse. Zwei Vorträge*, *ibid.*, 103.

triggered certain verifiable reactions. In a penultimate step, the collected data are referenced according to their subsequent processing in the bodies of the subjects and fed back to them. Under the title *Stimmgebungsstudien: Der Einfluß der Sieverschen Signale und Bewegungen auf die Sprachmelodie. Experimentalphonetisch untersucht* [Vocalisation studies: The influence of Siever's signals and movements on the melody of speech. Experimental phonetic research], Sievers' student Peters launched an experimental spin-off of his instructor's work. Throughout the extensive investigations, the crucial issue requiring clarification was whether the wire itself or each respective wire figure was capable of inducing anything in the test subjects, and if so, what. »When looking at Siever's signals and simultaneously performing Siever's movements, do objectively verifiable reactions occur in the speaking test subjects in terms of melody of speech, and what type of reactions are these?«⁵ His experiment was conducted using a composite of technical media and exposed wire figures.

»The calibration of the apparatus was thoroughly checked before each test. It consisted of (see Drawing 4): A. a good Zimmermann kymograph (K) to record the laryngographic curves; B. a Krüger-Wirth writing and transmitting apparatus (KS); C. a phonograph, Excelsior model (Ph) with a funnel (Tr) attached to a frame, affording a comfortable viewing height for the text and constant character arrangement (*II large cold*).«⁶

⁵ W. E. Peters, »Stimmgebungsstudien I. Der Einfluß der Siever'schen und Bewegungen auf die Sprachmelodie. Experimentalphonetisch untersucht«, in: *Psychologische Studien*, ed. Wilhelm Wundt, 10. Bd., 1917, 387-570, at: 390.

⁶ Peters, »Stimmgebungsstudien I. Der Einfluß der Siever'schen Signale und Bewegungen auf die Sprachmelodie. Experimentalphonetisch untersucht«, *ibid.*, 390.

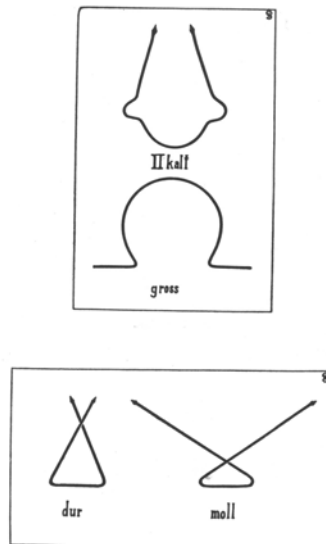


Fig. 6: Drahtfiguren.

Nach Eduard Sievers, „Neues zu den Rutzschen Reaktionen“, in: *Archiv für experimentelle und klinische Phonetik* I (1914), 225-252, at: Tafel I.

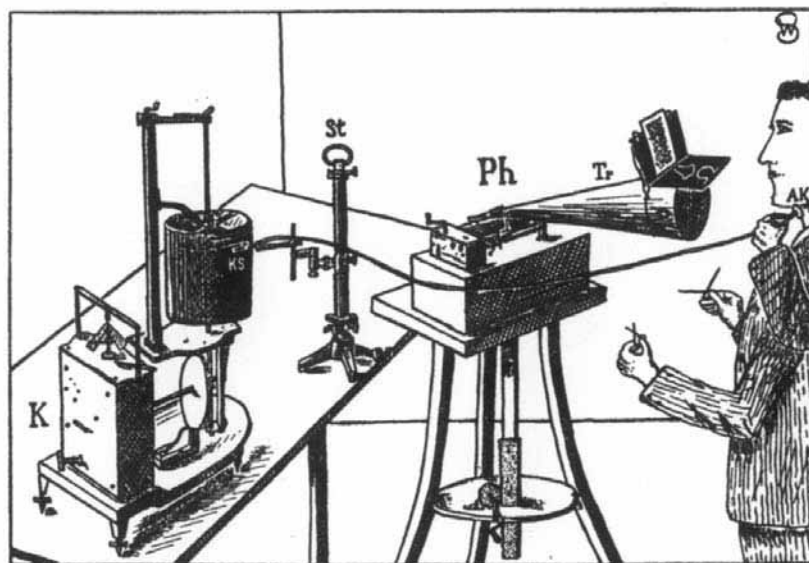


Fig. 7: Untersuchungsaufbau.

Nach W. E. Peters, „Stimmgebungsstudien I. Der Einfluß der Sievers'schen Signale und Bewegungen auf die Sprachmelodie. Experimentalphonetisch untersucht“, in: *Psychologische Studien*, ed. Wilhelm Wundt, 10. Bd., 1917, 387-570, at: 393.

The results were and remain controversial. In addition, was been increasing criticism of the high degree of subjectivity in sound analysis. Sievers himself became a medium, stylised by his special skills of objective mediation that were unique to him and essentially impossible to transmit to others. This controversial indisputable champion took the secret of his technique

with him to the grave; it could scarcely have been communicated to others, as it was rooted in an entirely unique predisposition of Sievers. Sievers was said to possess an almost mediumistic sensitivity to the operation in question, which was not entirely useful for the reputation of his sound analysis method.

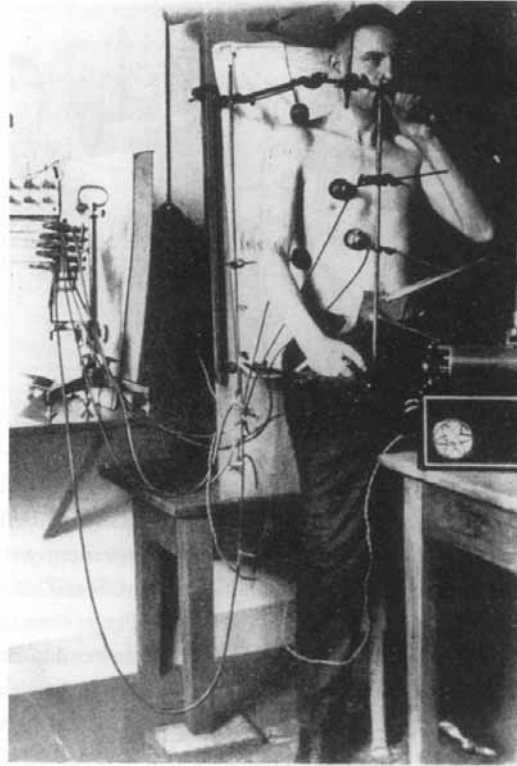


Fig. 8: Experimentelle Prüfung der Rutz-Sieversschen Typenlehre.
Nach Hans Schulte, „Experimentelle Prüfung der Rutz-Sieversschen Typenlehre“, in: *Neues Archiv für die gesamte Psychologie* 70 (1929), 119-208, at: Tafel I.

III.

With the technique under so much pressure, a plethora of authentication strategies and practical tests were proposed to resolve the debate. One of these went straight to the heart of German studies, producing a philological litmus test that leaves nothing to be desired in terms of drama or prominence. The technique's greatest moment in the spotlight occurred when the German studies scholar Julius Petersen posed the pressing question of the authenticity of Goethe's dictated speeches to Johann Peter Eckermann. This was the showdown: The technique of sound analysis – no longer merely symbolic words, but rather curves to be applied in practice – was to provide information on the very poet who had dedicated an entire era to individuality and his own name. How this scene between Sievers, Goethe, and himself

would develop, Petersen described at first with undisguised scepticism, not only with regard to the possibilities of the method but also the significance of Eckermann, Goethe's secretary. »Now the question remains of whether these direct recordings are actually capable of capturing the spoken word of Goethe in stenographic fidelity.«⁷ This last point regarding stenographic fidelity, with its immense semantic weight and methodological burden, Petersen quickly decided to address to Sievers.

»For the investigation of whether the present wording is Goethe's or Eckermann's, the sound analysis research method, in Sievers' newest version, offers a technique of motoric assessment to the observer. Since Goethe's expression is linked to Personal Curve I, while Eckermann belongs to Type II, this method (whose validity is disputed) leads to improved understanding in longer sections. In general, in all of the major texts that Eckermann had attributed to Goethe, only Becking Curve II could be found. This result is not surprising, since Eckermann was not a stenographer, and because all of these words were transmitted through his own medium.«⁸

Petersen skilfully parsed Goethe's Eckermann using all indices of what distinguishes media, and he took Eckermann to be a *medium* also in terms of words. Here, the medium's necessary renunciation of its own individuality – that which could be referred to as indifference or ignorance with regard to content – was identified by Petersen, who connected it to a (qualified) unflattering psychological profile of the writer. A picture was thereby painted of the discarnate secretary become flesh, positioning him against the realities of both media and cultural technique, but also posing a question concerning the margins for deviation, and finally capitulating with regard to the formative influences of the poet. The wire did not become the sign for a curve; rather, the aura of Goethe, present in reality, was directed through the writer Eckermann: »Over the course of nine years, Eckermann had absorbed so much from Goethe that for the rest of his life only Goethe-esque material could emerge from him, in perception and in word. This growth into Goethe's thought-form was favoured by the

⁷ Julius Petersen, *Die Entstehung der Eckermanschen Gespräche und ihre Glaubwürdigkeit*, 2., vermehrte und verbesserte Auflage mit einem Faksimile und einem Anhang ungedruckter Briefe von und an Eckermann, Frankfurt am Main 1925 (Deutsche Forschungen; Heft 2), 100.

⁸ Petersen, *Die Entstehung der Eckermanschen Gespräche und ihre Glaubwürdigkeit*, ibid. 100.

weak nature and high degree of adaptability of the autodidact, who had no need to sacrifice any strong individuality.«⁹

The points Petersen raised represent a wealth of relevant details that should themselves (in their seemingly ludicrous positivism) provide information – regarding what Goethe actually said on specific days, and what Eckermann wrote on his own account. In contrast to his depiction as weak in individuality and strong in media, the secretary insisted on the idea of his personal value: He would not be content to take a back seat in the role of phonographer or stenographer, but instead wanted his own individuality to be taken seriously. Between fact and fiction, between self-realisation and media reproductions, the issue of real concern is buried. Although Petersen spelled out the possibilities provided by the method, he also touched upon the philologist's dream of intra-individual determination of authorship, and there his enthusiasm came to an end. The »flash in the pan« that was sound analysis had not panned out. This amounted to a type of twilight for Sievers' media, the sound analysis from which so much had been hoped for so long. After his initial enthusiasm, Petersen came to regard sound analysis as comparable to the perfidious practices of spiritualism and mediumism, referring to the use of wire figures in the same breath as divination. Thus, judgement was pronounced: Sievers' sound analysis was and remains merely a brief episode in the history of philology, not an enduring method.

»If the posture-dependent types of the presentation are also defined by specific curves based on timing – in German: Taktgebung – and are arbitrarily reproduced, and if the observation through the use of wire figures (equivalent to a divining rod) is supported by a certain auto-suggestion, then in this technique, as in the medium of dowsing, the actual recording apparatus is subjective and cannot be replaced by any mechanical recording instrument. This medium remains irrational, and the method must for now be consigned to the past, as a secret that Eduard Sievers took with him to the grave, because in spite of all his efforts and despite its transmission to

⁹ Julius Petersen, *Die Entstehung der Eckermannschen Gespräche und ihre Glaubwürdigkeit*, 2., vermehrte und verbesserte Auflage mit einem Faksimile und einem Anhang ungedruckter Briefe von und an Eckermann, Frankfurt am Main 1925 (Deutsche Forschungen; Heft 2), 146.

individual students, it has not succeeded in becoming a universally accessible, reliable method.«¹⁰

In his final judgment, Petersen appeared to qualify not only the possibilities of the method, but also in part his own enthusiasm regarding its philological potential. The references to media and divination, to Sievers and the secret taken to his grave finished off sound analysis once and for all, condemning it to operational irrelevance. The assessment of the psychologist Carl Stumpf was also harsh, but tinged with an undertone of regret. He spoke earnestly about Sievers' cabinets of wire figures in terms of the incomprehensible self-deception and auto-suggestion of the otherwise highly esteemed philologist. While he was still alive, Sievers went on the offensive in reaction to his critics, reporting the successes of others in applications of the wire figures in an attempt to strengthen his own theories through these intersubjective references.

»In fact, the contributor to the *Vossischen Zeitung* [...] was convinced that he, together with some acquaintances of mine, following a meeting of the Berlin branch of the International Music Society, had successfully conducted these experiments, which he summed up thus: »A poem of Type I seemed to sound best and most natural when the wire of Type I supported the speaker; the wire of Type II, however, created clearly noticeable inhibitions that manifested themselves in changes in the tone of voice, unclear articulation, a strange, unnatural speech melody, interruptions in the rhythm, etc.«¹¹

However, as the spiritual and phantasmatic draw of the technique was in no way decreased by its operational irrelevance, the skirmishes and debate over the validity of the discipline continued. As an advocate for sound analysis, Sievers himself was as persistent and stubborn as his wire was bendable and flexible. One final scene portrays him in the midst of a curious deliberation as the manipulator behind sound analysis and all the arrangements that were made in its implementation. In the practice of sound analysis, his concerns took shape, and the founder of the discipline unwillingly positioned himself in a way that could be scarcely be

¹⁰ Julius Petersen, *Die Wissenschaft von der Dichtung. System und Methoden der Literaturwissenschaft*, 2. Aufl. Mit Beiträgen aus dem Nachlaß herausgegeben von Erich Trunz, Berlin 1944, 106f.

¹¹ Eduard Sievers, »Neues zu den Rutzschen Reaktionen«, in: *Archiv für experimentelle und klinische Phonetik*, I. Bd., 1914, 225-252, at: 247.

more significant regarding the divergence between his claims and the perception of the discipline. Just as the sun was beginning to set on his analysis, Sievers seemed to have dreamed of an expansion that would replace the hand-bent wires with mechanically reproduced exemplars. At any rate, with regard to the production of wire curves, Sievers was considering wire widths that could accommodate the transition in manufacturing to machines of mass production.

»Brass wires are easy to bend by hand up to a thickness of 1.75mm, which I usually use; however, in the potential mechanised production, I would recommend a width of 2mm more. The increased width of the metal makes [the figure] seem more robust and yet does not disturb the readings, etc.«¹²

Even as the outright twilight of his medium approached – the impending darkness that would seal the fate of sound analysis as a flash-in-the-pan philological technique – Sievers dreamt of creating a large-scale operation for his invention. The trajectory of the medium of sound analysis reflects the losing battle over the use of signs in the age of mechanical reproduction.

¹² Sievers, »Neues zu den Rutzschen Reaktionen«, *ibid.*, 237.