

The Lost Movements of Ernst Toch's *Gesprochene Musik*

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Gesprochene Musik, by Ernst Toch (1887–1964), is a forgotten milestone in the history of electronic music.¹ A three-movement suite consisting of spoken music for choir, it is one of the few paradigmatic representatives of the genre of *Grammophonmusik*, which made use of prerecorded gramophone discs in a concert setting. The work was premiered in 1930 at a Berlin festival devoted to new music, in a concert featuring original works for gramophone playback by two rising stars of the German contemporary music scene, Toch and Paul Hindemith. The pieces were performed only once, yet through the intervention of a young John Cage, the score of the third movement of *Gesprochene Musik*, the “Geographical Fugue,” appeared in Henry Cowell’s journal, *New Music*, five years later. Although Cage published the piece in the context of a collection of music written expressly for gramophone, his version led the “Geographical Fugue” to receive a new lease of life as a purely acoustic choral showpiece performed live, which would, ironically, become Toch’s most famous work.²

Given that there was no further trace of the gramophone discs from the original concert, the first two movements of Toch’s suite were long considered lost. However, Toch’s original sketches were in fact fortunately preserved at the Toch Archive at UCLA. Guided by the composer’s grandson, Lawrence Weschler, Christopher Caines rediscovered the sketches for “O–a” and “Ta–tam” in 2006, and created the first full edition of *Gesprochene Musik* as part of a project he choreographed entitled “Worklight.” This was the first complete performance of *Gesprochene Musik* since the work’s premiere in 1930. The current essay presents an introduction, contextualization, and analysis of the first two movements of *Gesprochene Musik* ahead of the publication of Caines’s (2014) preface and edition in the current volume of this journal.

In recent years, the origins of the “Geographical Fugue” have begun to receive scholarly attention. Weschler (2003) has written extensively about his grandfather’s life and career, and has produced a humorous report on Toch’s encounter with John Cage in California in 1935. In *Capturing Sound: How Technology has Changed Music*, Mark Katz (2010, 109–23) has written about the relationship between *Grammophonmusik* in the context of early mechanical music and recovered various contemporaneous theories about the potential of the phonograph and gramophone to transform music

composition. In a previous article (Raz 2012), I built on Katz's work in a historical and analytical discussion of Toch's "Geographical Fugue." My research contextualized Toch's compositional choices within various artistic, political, and scientific discourses of his age, focusing in particular on the relationship between experimental art and technology, postwar constructions of the body, and the influence of contemporary research on phonetics and sound reproduction.

Caines's recent discovery and restoration of the lost movements of *Gesprochene Musik* open up exciting new avenues for research on *Grammophonmusik*. The relationship between the musical materials of the new movements and those of the "Geographical Fugue" can now be explored for the first time. Toch's handwritten notes within the original manuscript further reveal tantalizing hints about the compositional process of the pieces. Finally, locating Toch's work within the context of the early days of the Donaueschingen festival series, and the contemporary music scene in Weimar Berlin can enrich our understanding of the interaction between the music, technology, and society of the time.

Toch, Experimental Radio, and the Contemporary Music Festival Scene

Born in Vienna to a Jewish family, Toch studied medicine, philosophy, and music in Vienna, Heidelberg, and Frankfurt respectively. As a young composer he achieved significant success, receiving the Frankfurt-based Mozart prize in 1909 and the Mendelssohn Stipendium from the city of Leipzig in 1910 and 1913. He moved to Berlin in 1929, where he composed orchestral works, operas, and incidental music for radio plays, garnering substantial critical and popular success. Published by Schott, Toch's music was often programmed alongside his contemporaries Paul Hindemith, Igor Stravinsky, and Arnold Schoenberg.³ In 1933, Toch fled Germany and ended up in Hollywood, where he wrote music for films in addition to a substantial body of chamber, solo, and orchestral music. In spite of notable distinctions in the US, including the Pulitzer Prize for his third symphony in 1956 and a Grammy four years later, Toch's career never fully recovered its pre-war momentum; towards the end of his life, he described himself as "the world's most forgotten composer" (Weschler 1996).

Up until his emigration in 1933, Toch was active in the *Gebrauchsmusik* circle, which included figures such as Paul Hindemith, Paul Dessau, Kurt Weill, Hanns Eisler, and Berthold Brecht. An especially prolific composer,

he was repeatedly commissioned by the *Kammermusik-Aufführungen zur Förderung zeitgenössischer Tonkunst*—an annual chamber music festival jointly directed by Hindemith, Heinrich Burkhard, and Josef Haas that would later become known as *Neue Musik Donaueschingen*.

The festival provided a prominent platform for electronic and mechanical music. As early as 1926, it featured works by Hindemith, Toch, and the young composer Gerhard Münch for the automatic Welte-Mignon-Klavier. The same festival saw the presentation of Jörg Mager's *Spärophon*, an electronic instrument similar to the theremin, which enabled the production of microtones using difference tones (sounds resulting from the difference between two frequencies).⁴ Hindemith also employed a mechanical organ in his score for the *Triadisches Ballet*—a collaboration with painter Oskar Schlemmer that was considered by many to be the highlight of the festival (see Häusler 1996, 90).

In 1927, the festival moved to Baden–Baden, where it was renamed *Deutsche Kammermusik Baden–Baden*. Over the next three years, music and technology stood at the forefront of programming: all three events gave substantial attention to the interaction between film and music and featured a number of unusual collaborations, which included new scores to existent cartoons and news segments. These included episodes of the American animated series *Felix the Cat*, scored by Hindemith, Toch, and Walter Gronostay; the German children's cartoon *Die Kinderfabrik* (The Children's Factory) scored by Toch for six wind instruments; Darius Milhaud's original score for a news segment; Paul Dessau's score for the puppet movie *Der verzauberte Wald* (the Magic Forest); and an animated short entitled *Vormittagsspuk bewegter Gegenstände* (Ghosts Before Breakfast) scored by Hindemith for mechanical piano. The festival also foregrounded chamber music for amateurs, children, and community groups—a cause close to Hindemith's heart, and for which he strongly advocated by forging close partnerships with the Baden–Württemberg ministry of culture, local youth movements, and important figures in music pedagogy such as Fritz Jöde.

The 1929 production of the *Deutsche Kammermusik Baden–Baden* saw a major coup for the organizers in the addition of a new major body to the festival: the *Südwestdeutsche Rundfunk*, or Frankfurt radio, which at the time was directed by Hindemith's brother-in-law, Hans Fleisch.⁵ Together with conductor and new music advocate Hermann Scherchen, the *Südwestdeutsche Rundfunk* orchestra participated in two programs while the station provided technical assistance. The emphasis on music for radio provided mixed results in the domain of concert music and radio plays (Häusler 1996, 104), but there was one stand-out success: *Der Lindberghflugh*, a radio play by Bertold

Brecht with music, composed by Kurt Weill and Hanns Eisler, for tenor, baritone, bass, mixed choir, and orchestra. In an attempt to forefront the role of the listener within the radio play, the piece was presented twice: the first time it was played offstage and broadcast into the concert hall, and the next day it was performed live in the hall, with a selection of “listeners” onstage.

The resources of the *Deutsche Kammermusik Baden–Baden* were substantially reduced by the 1929 stock market crash; subsequently, the 1930 festival was moved to Berlin where Hindemith, Burkhard, and Flesch were newly based. With the appointment of the interim director of the Hochschule für Musik, Georg Schünemann, to the artistic direction committee, the festival found a home at the conservatory, which also featured a new *Rundfunkversuchsstelle*, or experimental radio laboratory.

Now renamed *Neue Musik Berlin*, the seventh instantiation of the festival took place in 1930 between July 18 and 21. It was smaller in scale than the events of the preceding years and dedicated only to two genres of music: vocal repertoire for amateurs (*Laienmusik*) and music for radio and gramophone (*Rundfunk* and *Schallplatte*). The former was represented by performances of didactic pieces, or *Lehrstücke*, as well as new works for children and lay choirs, while the latter was explored with the premiere of two radio plays scored for chamber ensemble: Hindemith’s *Sabinchen* and Paul Dessau’s *Orpheus*. Hindemith and Toch also contributed new compositions for the gramophone, and Friedrich Trautwein presented in a lecture his newly invented electronic synthesizer, the *Trautonium*. The lecture was followed by a performance on three Trautoniums of seven trios composed by Hindemith; joining Hindemith at the Trautonium were his student Oskar Sala and professor of piano Rudolph Schmitt.

Describing the atmosphere of the festival, Schünemann compared it to “the character of a professional conference, which, like an industrial laboratory, aims to evaluate artistic, technical and sociological ideas in the domain of music according to their potential usefulness in general musical life” (Häusler 1996, 112).⁶ The materials testing laboratory, with its scientific and industrial context, is an unusual metaphor for a music festival. However, it closely aligns with the *Gebrauchsmusik* ideals of previous festivals as well as with the political and financial exigencies of the times. As Schünemann’s statement attests, the *Gebrauchsmusik* composers were eager to carve out a utilitarian purpose for their work, particularly through the pioneering incorporation of new technologies. Indeed, both Hindemith’s and Toch’s compositions for gramophone record exemplify this experimental attitude. Hindemith contributed two works for the evening, entitled *Zwei Trickaufnahmen*: one consisting of overlaid recordings of himself on the viola and a xylophone–like instrument at different speeds; the other, sub-

titled *Gesänge über Vier Oktaven*, was described by Willi Shuh as an “aria . . . in which the human voice extends to a range of approximately 3 ½ octaves” (quoted in Katz 2010, 111).⁷

Composing for gramophone record was a challenging affair. The records themselves were made of various fragile plastic substances that tended to easily scratch and break; in addition, of course, familiar audio editing techniques such as splicing and layering were impossible. The *Rundfunkversuchsstelle* used 78-rpm records that had a diameter of 25 cm and held between 3–5 minutes of music, thus limiting the duration of the compositions. Katz surmises that Hindemith probably used multiple discs for the different instruments, in something approaching the following process: “For the final version he would have had to play multiple discs—and therefore phonographs—simultaneously . . . In doing so he would have had to stop and start all the machines over and again; poor timing or clumsy movements could ruin the work” (Katz 2010, 111).

Unlike Hindemith, Toch’s suite was scored exclusively for a speaking choir. The decision to use speech as the raw material for his piece resonated both with the festival’s emphasis on amateur choral music as well as with its dedication to works for experimental radio and new technologies. Given that Toch and Hindemith were both spending time in the *Rundfunkversuchsstelle*, it is extremely likely that they were aware of the exciting developments in vowel synthesis resulting from Trautwein’s invention.⁸ In the words of Hindemith’s student, Sala:

Trautwein brought a large transformer and a narrowly packed rotating capacitor with 10,000 Picofarad and turned both on in an alternating current (*Kippschwingkreis*). I turned the capacitor and played a few tones. Then we suddenly heard vowels as if spoken in a low or middle range, at different pitches. When we changed the capacitor speed, we added a glissando to the tones, we heard “Wau–wau” and “Miaou.” Can you imagine how surprised we were? I suspect that Trautwein had imagined something along these lines, but the result surely exceeded his expectations. (Oskar Sala Fonds am Deutschen Museum, 2013)

Trautwein used Carl Stumpf’s formant theory in order to calculate the necessary frequency ranges for each vowel, and Sala notes that when Stumpf himself visited the *Rundfunk Versuchsstelle*, he was visibly shocked at the Trautonium’s ability to produce electronic vowel sounds.⁹ For Trautwein, however, the vowels were only a by-product of the Trautonium, a step on the way to synthesizing various instrumental timbres.

Of course, Toch was not the first to realize the idea of treating phonemes as raw material for musical compositions. Various nineteenth-century poets had explored the result of stripping poetic forms of their semantic content,

including the nonsense poems of Edward Lear and Lewis Carroll, which would later inspire the Swiss nonsense poet Christian Morgenstern. Toch was interested in the latter's work, and set his play *Egon und Emilie: kein Familiendrama*, for soprano, speaker, and seven wind instruments in 1928, only two years prior to the composition of *Gesprochene Musik*.

Along these lines, Toch's *Lehrkantate, Das Wasser*, a setting of a text by Alfred Döblin and a work also commissioned and premiered by *Neue Musik Berlin*, deserves careful consideration. The premise of *Das Wasser* is a conversation between two figures walking along the beach about the nature of water in general, and the sea in particular; a choir and a single speaker serve as neutral commentators. To call the work's text unusual would be an understatement; with vocal lines such as "Zwei Komma fünf Prozent Salz,"¹⁰ "Wasserstoff und Sauerstoff, H zwei O,"¹¹ and even "Bei Null Grad gefriert es, bei hundert Grad seidet es, bei neunhundertfünfzig fallen die Atome auseinander,"¹² the *Lehrkanate* forefronts its didactic message relentlessly.

Undeterred by the highly technical nature of the text, Toch takes a neoclassical approach to *Das Wasser*, writing in a modal harmonic language and including familiar forms such as an arietta and fugue. His program notes, published in an issue of the music journal *Melos* dedicated to the festival, offer a glimpse into his compositional approach. Toch (1930b) first mentions that he did not select the text; it was given to him with the instruction to compose it *ad libitum*. He further notes that, in order to use a text, it has to "actually, not metaphorically, 'sound' . . . when Döblin read the 'Wasser' to me, it 'sounded' to me . . . it had to do with the words, which I can best describe as having an 'atmosphere' . . . lying in the naïve, inartificial, often banal language, which affected my musical sense" (221–22).

In his program notes, Toch also reports that while the closed forms of the music came from the words themselves, the division into movements did not necessarily follow the division of the text. In finding the music within a text as determinedly prosaic as Döblin's poem, it appears that Toch relied to a large extent upon the sonic properties of the words. Writing a fugue with a text as repetitive as "Das Wasser, das Wasser, was ist das Wasser"¹³ necessitates paying attention to the timbres of consonants, vowels, and alliterations. Perhaps this procedure primed him for the challenge of *Grammophonmusik*, which, as we will see, features similar kinds of texts with even less semantic content.

Although they moved in very different circles, Toch may have been familiar with Kurt Schwitters, an avant-garde artist also based in Berlin, who had been publically performing a sound art composition he called the *Ursonate* since 1925. Schwitters used nonsense words to convey the

pure form of a sonata: introducing first and second themes, moving through development sections, ending with codas, etc. Toch would take a similar (albeit more sophisticated) approach in *Gesprochene Musik* by using various syllables and vowels to depict formal sections and episodes of development.

Toch's *Grammophonmusik*

Toch's approach to *Grammophonmusik* foregrounds human speech, and all three movements of the piece consist exclusively of spoken text. In the "Geographical Fugue," a four-part choir speaks a text consisting primarily of the names of various international locations, adhering to a strict fugal structure. All the customary trappings of the form occur: staggered TASSB entry, subject and countersubject, stretto, and a climactic pedal (on the rolled syllable "R") before the final bars. As we will see, Toch's selection of his musical material, and specifically the type and order of the vowels, reflects the constraints of the gramophone's recording and playback capabilities.

Toch was intensely interested in the acoustic properties of speech, which, like music, can be understood in terms of rhythm, pitch, volume, and timbre. Approached from this angle, the spoken word provides ideal raw material for musical composition. As Toch (1930b, 221–22) explained in the program notes he wrote for the piece, the selection of materials was carefully planned:

I chose to [explore] the spoken word, and let a four-part mixed chamber choir speak specifically determined rhythms, vowels, consonants, syllables, and words, which by involving the mechanical possibilities of the recording (increasing the tempo, and the resulting pitch level) created a type of instrumental music, which leads the listener to forget that it originated from speaking.

In addition, the technological limitations of the machine served as a fruitful impetus for artistic exploration. Upon increasing the playback speed, Toch (1930b, 221–22) noted: "Only in one respect did the machine unfortunately deceive me: it changed the vowels in a way that I had not foreseen. In two short movements and a 'Geographical Fugue,' I tried to address this problem from different angles."

In my previous article (Raz 2012), I explored Toch's solution to this problem in the composition of the "Geographical Fugue." Analyzing the acoustic properties of the locations featured in the work, I discovered a number of ways in which Toch's selection of words was designed to overcome the effect

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of the faster gramophone speed, which caused all of the vowels to sound “higher,” a distortion colloquially known as the chipmunk effect. I will briefly review these here before turning to the two newly discovered movements.

The “Geographical Fugue” consists of the following words:

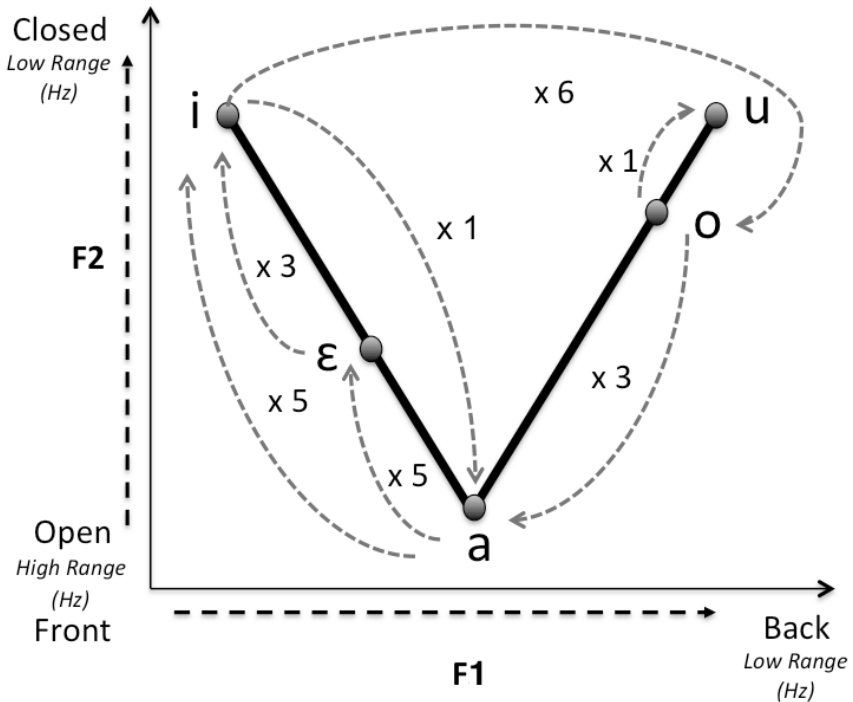
Ratibor!
Und der Fluss Mississippi
und die Stadt Honolulu
und der See Titicaca;
Der Popocatepetl liegt nicht in Kanada,
sondern in Mexiko, Mexiko, Mexiko.
Kanada, Malaga, Rimini, Brindisi,
Kanada, Malaga, Rimini, Brindisi.
Ja! Athen, Athen, Athen, Athen,
Nagasaki, Yokohama,
Nagasaki, Yokohama.

If we try to reconstruct Toch’s criteria for selecting these words, we discover that the overwhelming majority of the syllables in the fugue are open (ending with a vowel), rather than closed (ending with a consonant). Furthermore, only a subset of eight vowels (out of the seventeen German monophthongs) appears in the fugue: *a, o, i, l, ε, e, u, v*. Of these, only the five cardinal vowels appear in the geographic locations in the fugue: *a, i, o, ε, and u*. These relationships are illustrated in Table 1, which tabulates the appearances of each vowel in the text. The column to the far right tabulates vowel pairs, i.e., the frequency with which two vowels follow each other within the same word.

As the table shows, the vowels and vowel pairs within words are not randomly distributed. We can employ a familiar linguistic heuristic: the vowel triangle illustrated below in Example 1, to analyze the acoustic quality of Toch’s vowels. The vowel triangle is an abstract representation of the physical location of vowel production within the mouth, mapped horizontally and vertically. The *x*-axis (front–back) corresponds to the depth of the mouth: imagine it as a line running parallel from the center of the lips to the uvula. The *y*-axis (closed–open) corresponds to height within the mouth itself: imagine it as a line running from the nose to the chin. This geometrical representation correlates to the strength of the first two formants in different vowel sounds: the first reflects the horizontal position of the tongue within the mouth and the length of the oral cavity (i.e. the mouth’s elongation through changes in the position of the lips), while the second formant reflects the degree to which the mouth is open or closed as well as the vertical position of the tongue within the mouth. An intuitive way to understand the vocal triangle is to pronounce the cardinal vowels to yourself while paying attention to the physical changes of your mouth and tongue.

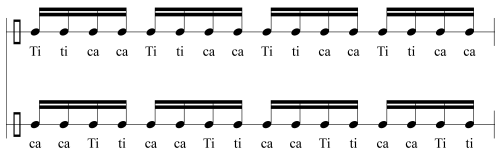
Geographic Names	a=33	i=24	o=12	ε=10	u=2	Vowel Pairs
Ratibor	ra	mi (2)	bor	te	lu (2)	a-i (5)
Mississippi	ca (3)	ssi (2)	ho	pe		i-o (6)
Honolulu	ka (3)	si	no	tl		o-u (1)
Titicaca	na (5)	ppi	po (2)	then (4)		i-a (1)
Popocatepetl	da (3)	ti (3)	ko (5)	me		o-a (3)
Kanada	ma (4)	xi (3)	yo (2)			a-e (5)
Mexiko (3)	la (2)	ri				e-i (3)
Kanada Malaga Rimini	ga (4)	ni				
Brindisi (2)	a (4)	brin				
Athen (4)	sa (2)	di				
Nagasaki Yokohama (2)	ha (2)					

Table 1: Geographic Names, Vowel Occurrence, and Vowel Pairs (within the same word) in the “Geographical Fugue.”



Example 1: Toch’s Vowels Mapped onto Vowel Triangle. (Adapted from Raz 2012.)

Example 1 maps the information from the rightmost column of Table 1 onto the 2-dimensional vowel triangle. The dotted arrows display the directionality of vowel pairings, taking the ordering of the vowels into account. With two exceptions (“Honolulu” and “Titicaca”), the ordering of the vowels maintains a consistent clockwise direction. This means that vowel pairings tend to follow a certain order: the mid-front / open vowel (a) is followed by vowels that are more closed and front (e and i), while the closed / front vowel (i), is followed by closed / back vowel (o), which in turn is followed by the mid-front / open vowel (a). Moreover, one of the two words that disturb this pattern (“Titicaca”), is the subject of a tight canon in which the syllables appear to “right” themselves, as shown in Example 2. In Raz 2012, I argued that Toch takes great care in preserving this order because it maximizes the acoustic difference among the vowels while also generating tacit auditory expectation in the audience, both factors which helped preserve sonic intelligibility in light of the distortion caused by the sped-up recording.



Example 2: Canon of Titicaca; soprano and bass, m. 23. (Reproduced from Raz 2012.)

Unlike the “Geographical Fugue,” “O–a,” and “Ta–tam”—the first and second movements of *Grammophonmusik*—consist exclusively of non-sense syllables. Both pieces are quite short: “O–a” is 43 measures long (including repeats), while “Ta–tam” is made up of 34 measures. They feature intricate polyphonic textures, imitations, canons, and various other compositional techniques. Both movements also share the metronome marking of quarter-note = 144, which, given the sheer impossibility of performing the piece “live” at this speed, likely refers to the target tempo for the gramophone’s faster setting. The subtitle “Kann ev. auch mit Soloquartet gem. w.” (can also be performed by a solo quartet) appears at the top of “O–a”; however, this marking can apply only to the first movement, since the second calls for solo parts in addition to the choir.

Formally, “O–a” invokes a scherzo, presenting a large-scale rounded binary form with sections that can be subdivided to give two further embedded rounded binaries (in the first statement of the Scherzo and in the Trio). This formal scheme is sketched out in Table 2, which also includes the text of each section:

Form		Measures	Text
Scherzo	Intro	1–4	O–a
	A	5–12	O–a Tirilirili Klapp
	B	13–16	Täritiri Taritiri täritiri toritiri tütiriti
	A	17–20	Tirilirili Klapp
Trio	C	25–32	Hiau äau (Hiaua äaua) Lala (Lalala) lau äau (laua äaua) Gogogo gok
	D	33–36	Klapp Eae aoa oio iui uou Oao eao iao eao Uoe oio aoe Klapp Ŭoŭ ouo eae aia
	C'	37–39	lai aia Karaba wăp lau äau äau oau Klapp
Coda (Scherzo)	A	40–43	O–a Klapp

Table 2: The text of the piece is built from these words, some of which are repeated extensively. This list does not reflect repetitions within the piece.

Making explicit reference to various scherzo conventions, the piece opens with the tenor line prolonging an oscillation between the vowels *o* and *a*, which gradually increases in speed from quarters to regular sixteenth notes. The oscillation remains steady throughout measures 5–12 and serves as a pedal point over which the resulting texture is built. The alto line presents the first theme, “tirilirili” (A), using an onomatopoeic word associated with birdsong in German. The soprano and bass accompany with staccato “klapp klapp” interjections, evoking the castanets indicated in the performance instructions, or perhaps even the response of supporting lines in a string quartet. This can be seen in Example 3, where Toch assigns each voice a distinct vowel range. Thus, the pedal is on *o–a*, the “theme” is on *i*, while the accompaniment is *a*.

wie Kastagnetten / like castanets
 klapp klapp
 [simile] klapp klapp klapp klapp
 li - ri - ti - ri li - ri - ti - ri li [klapp klapp] ti - ri li [klapp klapp] ti - ri li [klapp klapp] ti - ri
wie Kastagnetten / like castanets [simile]
 o - a ...
wie ein Triller / like a trill
 klapp klapp klapp klapp klapp klapp
wie Kastagnetten / like castanets [simile]

Example 3: “O–a” first theme; SATB, mm. 5–6. First theme in the alto line; pedal in the tenor. (Examples 3–11b are all excerpted from Christopher Caines’s new edition of *Gesprochene Musik*.)

The contrasting section (B) of the first binary features predominantly *i* sounds in a playful exchange of the thematic material from the basses up through the sopranos and back again, as shown in Example 4. Toch pays careful attention to the vowel progression during the descent in measure 15, carefully scoring each downbeat differently, moving from a to ä to o and ü. The accompanying alto and bass peter out with “ta–ri” and “ti–ri” syllables in measure 16, preparing the repeat of the first theme once more in measures 17–24, with the alternating “tari tiri” accompaniment of measure 16 sustained by the bass and soprano throughout.

Following a full stop on the last beat of measure 24, the Trio section of the piece begins with contrasting musical material. Two new motives are introduced: a sequence of *i–a–u ä–a–u* over a half note and triplets in the alto, and an accompanying dotted figure in the tenor, underscoring the syllables “la–la.” The three-measure phrase is capped by a sixteenth-note “go–go–go gok” motif, which starts in the bass and moves up through the alto and tenor to the soprano in measure 28, as shown in Example 5.

New material appears in the “D” section (measures 34–3). Sixteenth-note triplets with various vowel alternations (*e–a–e, a–o–a, o–i–o, i–u–i*, etc) alternate with unison statements of “klapp klapp.” Measures 37–38 reprise the “C” material, with alternating “klapp” syllables in the inner voices and a new accompanying motif in the bass, “ka–ra–ba wäp,” which is shown in Example 7. The piece ends with the inner voices reprising the opening *o–a* oscillation, before the final measure of the work ends with the “klapp klapp” motif spoken in unison.

Unlike “O–a,” every syllable in “Ta–tam” begins with a consonant, and many of the figurations (unsurprisingly) evoke the onomatopoeic associations of percussion sounds, particularly repeated words like “büm,” “tam,” and “ta.”¹⁴ The piece is a march, both in character and in form, with an introduction followed by first, second, third, and fourth strains (the term strain is associated with the successive sections of the march form). The strains and their related material are shown in Table 3.

Form	Measures	Text
Intro	1–2	Ta tam
Strain 1	3–10	Gobūm gobe Gobetigabe Gedebe Bete katebe tōn Bete katebe ta Liti pitipi ti Kati potupa tam taratipa tom Patapam
Strain 2	11–18	Quato p tope Ta pata Bogoto Liti pitipi ti Gita petogū tūgita petogū tū Tagita Ta te ti ta
Strain 3	19–26	Tata patata Rūtūpe rūtūpūtūtū tūm Taredi būm Tātā pātātā Tubum
Strain 4	27–24	Koteti patiteti bum Ten Tapita petapi Pūtope tapitepo tū Kopete patekite po Klan plan

Table 3: The text of the piece is built from these words, some of which are repeated extensively.

The introduction begins with two measures patterned text in the solo tenor line (shown in Example 8), followed by strain 1, accompanied by the basses in a pianissimo dynamic. Strain 1 relies primarily on the consonants *g* and *b*. Strain 2 is taken up by the altos, who are accompanied by the tenors and sopranos. Each group has a different vowel sound, which helps to differentiate between the parts: the melodic line features primarily the vowel *a*, the sopranos the vowel *i*, and the tenors the vowel *o*. Unlike the first strain, the second features primarily open syllables, such as “ta,” “pa,” “bo,” “go,” and “to,” as can be seen in Example 9.

Example 4 is a musical score for a vocal line. It consists of five systems of music. The lyrics are: "ti-ri-ti-ri ti-ri-ti-ri", "ti-ri-ti-ri ti-ri-ti-ri", "ti-ri-ti-ri ti-ri-ti-ri", "ti-ri-ti-ri ti-ri-ti-ri", and "ti-ri-ti-ri ti-ri-ti-ri". The score includes dynamic markings: *f*, *mf*, *mf*, *mf*, and *pp*. There are also accents and slurs. A note in the first system is marked with an asterisk and the text "* with very little accent".

Example 4: “O-a” contrasting section, “B” material; SATB, mm. 13–16. The motif ascends from the bass to soprano and back down again.

Example 5 is a musical score for a vocal line. It consists of five systems of music. The lyrics are: "Hi", "i-a-u ä-a-u i-a-u ä-a-u", "i-a-u ä-a-u i-a-u ä-a-u", "i-a-u ä-a-u i-a-u ä-a-u", and "go-go-go gok". The score includes dynamic markings: *ff*, *p*, *p*, *p*, and *p*. There are also accents and slurs. A note in the first system is marked with an asterisk and the text "* with very little accent".

Example 5: “O-a” trio section, “C” material; SATB, mm. 25–28. The theme in the alto is accompanied by tenor.

Example 6: "O-a" excerpt from "D" material; SATB, mm. 33–35.

Example 7: "O-a" new motif accompanying "C" material; bass, m. 37 (the figure is repeated in m. 38).

Example 8: "Ta-tam" introduction and first two measures of strain 1; tenor and bass, mm. 1–4.

Strain 3 features a mix of solo and choral parts: a single speaker sustains material related to strain 2 (first a soprano with “patata” then a bass speaker with “pätätä”), while the choir altos, tenors, and basses repeat the percussive pattern, “taredibüm.” The fourth and last strain, shown in Example 11a, starts softly with a duet in which the melodic line’s delicate “tapita” figure is accompanied with staccato pronunciations of the syllable “ten.” This winds down to *pp* with a series of imitations between various parts in the choir. The march ends with a sudden brash cry of “klan plan,” as illustrated in Example 11b.

Both “O–a” and “Ta–tam” differ from the “Geographical Fugue,” most obviously in using nonsense syllables rather than place names. They also require additional vowels that do not appear in the fugue: “O–a” makes use of ä, ä, and ü, while “Ta–tam” employs ü, ü, and ä. I imagine the following hypothetical scenario as one possible explanation: Toch composed these two movements first, but found that his performers had trouble remembering and performing the random sequence of vowels. Rehearsals took a long time, and it was difficult to achieve an accurate performance. Having cut the record, Toch discovered that certain vowel nuances that he worked on with the choir—such as the distinction between *a* and *ä*—were completely lost when the piece was played back at a faster speed. The new speed also made it difficult to understand the distinctions between various strains and sections of the works, as it was difficult to make out the words pronounced by each voice. Toch subsequently decided to solve this problem by limiting his vowels still further, and using actual words rather than nonsense syllables.¹⁵ Hence the “Geographical Fugue,” which would have been not only easier for his choir to perform, but also for his audience to comprehend.

Toch’s surviving holograph manuscripts for both “O–a” and “Ta–tam” shed some light upon the rehearsal process, although they raise many new questions as well. Written in pen on four single-lined staves ruled in pencil, the manuscripts contain a wealth of dynamic and articulation markings, as well as various performance instructions (such as “*wie Kastagnetten*,” or “*wie ein Triller*”). As Caines notes in his preface to the edition, there are a number of markings that appear to be later additions. For example, in “O–a,” question marks are penciled lightly over the downbeats of measures 28 and 32, coinciding with a missing text underlay at that point. It is not clear whether these queries came up during the proofreading process, or were added by a performer during the rehearsal process.

Furthermore, the *S* and *c* indications in “Ta–tam” were added in blue and red pencil, respectively. Caines (2014) surmises that during rehearsal, Toch may have “experimented with assigning the vocal figures of the piece alternately to soloists in each section and to full chorus.” Finally, there is a

mysterious marking in blue pencil of a square divided into four (a marking that Caines terms the “windowpane”) over the downbeats of measures 33 and 35 of “O–a,” and over the downbeats of measures 3 and 5 of “Ta–tam.” It is not clear what these markings mean. In “O–a,” they appear alone, whereas in “Ta–tam,” they appear over a tied half note, and a bracket appears over the target note.

Another intriguing point is the discrepancy in the neatness between the copy of “O–a” and “Ta–tam.” There is only a single erasure in the former at measure 37, while the latter has numerous copying errors that were corrected on the spot. Perhaps Toch made these fair copies at different times, and they reflect changes in his degree of concentration. In any case, the nature of the corrections attest to the extent to which Toch was sensitive to the different colors and timbres of the work. For example, an erasure in measure 15 of “Ta–tam” reflects the care with which Toch structured his spoken text to reflect a coherent form and hypermetric flow. Here Toch scratches out his original “quato pato peta” in the tenor line, and replaces it with “gita patogo tũ.” Changing the words on the downbeat of a new group of regular four–measure phrases helps to sustain the temporal pattern of syllabic variance. The distribution of the text to the voices, moreover, was also carefully planned out, as can be seen in an erasure in measure 33 of the same movement, where Toch began mistakenly to write in the alto rather than the tenor line, and then caught himself before adding the text and dynamic indications. He corrected this error by copying out the notes again on the staff below.

Later in life, Toch’s exquisite sensitivity to the sonic dimension of spoken text would become legendary; his grandson recalls that he was unable to participate in most social activities because “he was afflicted with perfect pitch and such sensitive ears that any conversation registered as music. The inevitable racket of intercutting conversations at a restaurant registered as very, very bad music—an actual torture.” Whether this was a legitimate musical affliction or simply a reflection of the composer’s mental state does not matter; it is clear that, as Weschler (1996) writes, in America the exiled Toch “was never to recover that lost sense of cultural resonance and buoyancy.”

As a successful young composer in Weimar Germany, Toch was able to harness his musical and intellectual talents to create a work that captured a number of influences at a remarkable moment in the development of early electronic music. In *Gesprochene Musik* he incorporated advances in early recording technology, cutting–edge research in contemporary phonetics and vowel synthesis, and the technological leanings of the *Gebrauchsmusik* circle in Berlin. By showcasing the depth and sophistication of Toch’s artistry

Handwritten musical score for "Ta-tam" in SATB format. The score is written on five staves. The lyrics are: "ta pa ta pe te", "gita pe ta pe", "gita pe ta pe", "gita pe ta pe", "gi ta pe ta gi ta gi ta pe ta pe", "ta ta ta pe ta pe ta pe ta pe", "ta ta ta pe ta pe ta pe ta pe", "ta ta ta pe ta pe ta pe ta pe", "ta ta ta pe ta pe ta pe ta pe". The score includes dynamic markings such as *mf*, *p*, and *f*. There are also performance instructions like "3", "2", and "1". A blue box highlights the letter "S" and a red circle highlights the letter "c".

Plate 2: "Ta-tam"; SATB, mm. 36-41. Note the erasure in m. 37, and the blue and red indications "S" and "c" in m. 41, which probably correspond to "solo" and "chorus."

ahead of the publication of Caines's new edition in this volume, my hope is that further scholarly attention will be paid not only to *Gesprochene Musik*, but also to the many other valuable works in Toch's catalogue.

Notes

1. Special thanks are due to Christopher Caines for generously sharing his edition of *Gesprochene Musik*, and to Ren Weschler and Dina Ormenyi of the Ernst Toch Society for all their help. Additional thanks are due to Tom Fogg, Thomas Patteson, Courtney Thompson, and Nori Jacoby for their helpful suggestions, and to Dan Harrison, Evan Cortens, and Caroline Waight for their encouragement.

2. As Weschler (2003) writes, Toch himself considered the piece a joke.

3. For example, the Cologne Society for New Music's in program for 1930 included three orchestral concerts with works by Hindemith, Stravinsky, Schoenberg, Toch, Erdmans, Webern, and Jamsch, while in Berlin that same year, the renowned new music conductor Hermann Scherchen's ten concerts include works by Hindemith, Milhaud, Reger, Schreker, Schoenberg, and Toch.

4. For more on Mager's *Spärophon* see Patteson 2016, 52–81.

5. Radio, in particular, with its promise of real-time communication with a mass audience, was revolutionizing the consumption and creation of contemporary music at the time. Germany's first public radio station was inaugurated in Berlin in late 1923; by 1924, eight additional regional stations had been established throughout the country. Expanding from the core of approximately 200,000 demobilized military wireless operators, by 1926 there were over a million subscribers to the regional radio channels, a number that would triple by 1930. For a discussion on the origins of public broadcasting in Germany see Jelavich 2006, 36–61.

6. Unless stated otherwise, all translations are my own.

7. While both Hindemith and Toch's original records have been lost, Hindemith's work ended up in Schünemann's estate, where they were donated to the Staatliche Institute für Musikforschung in Berlin. Uninterested, the institute returned the records to Schünemann's son, who subsequently sold them to a junk dealer; however, their contents were fortunately preserved by a tape copy made by the musicologist Martin Elste (1996, 195–221).

8. For more on Trauwein's *Trautonium* and vowel synthesis see Patteson 2016, 114–151.

9. The relationship between Toch's *Grammophonmusik* and concurrent speech synthesis deepens when one considers that Stumpf was also the founder of the Berlin Phonogram Archive, housed at the conservatory.

10. Two point five percent salt.

11. Water and Oxygen, H₂O.

12. At zero degrees it freezes, at a hundred degrees it boils, at nine-hundred-fifty, the atoms separate.

13. The water, the water, what is the water?

14. A similar example can be found in Act 1 scene 3 of Alban Berg's *Wozzeck*, which uses the onomatopoeia "Tschin Bum, Tschin Bum, Bum, Bum, Bum!" *Wozzeck* premiered at the Berlin State Opera in 1925, four years before Toch moved to the city.

15. I examine the selection (and exclusion) of specific geographical locations in Raz 2012.

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