Étienne-Jules Marey
and Charles Rosapelly.
Vocal polygraph.
A bit later, some innovators emboldened themselves. They deliberately broke with conventions, demanding no more than their instinct for rhythm and the sensitivity of their ear, the cadences and the musical substance of their verses. Their attempts also depended on the theoretical research found in the works of phoneticians, and on the recordings of the voice. . . . In the period between 1880 and 1890, several hardy spirits undertook to construct a doctrine of art derived from then fashionable theses of psychophysics. The study of sensibility by the methods of physics, research into the (hypothetical) correspondence of sensations, the energetic analysis of rhythm, were all enterprises not without effect on painting and poetry.

—Paul Valéry, Existence du symbolisme (1939)

There was in those days still a Parisian research for technique. Spire wrangled as if vers libre were a political doctrine. De Souza had what the old Abbé called une oreille très fine, but he, the Abbé, wrapped up De Souza’s poems and asked me to do likewise in returning them lest his servante should see what I was carrying.

The Abbé was M. Rousselot who had made a machine for measuring the duration of verbal components. A quill or tube held in the nostril, a less shaved quill or other tube in the mouth, and your consonants signed as you spoke them.

They return, One and by one, With fear, As half awakened, each letter with a double registration of quavering.

—Ezra Pound, Polite Essays (1937)

Futurist and dada performance arts of sound have often been characterized as springing from nowhere, or as spontaneous effects of whirring, grinding, screeching modern machines in cities and on battlefields. “We delight much more in
combining in our thoughts the noises of trams, of automobile engines, of carriages and brawling crowds, than in hearing again the *Eròica* or the *Pastorale,*” intoned Luigi Russolo in *The Art of Noises.*¹ Who needed art when the technological soundscape already did it better? This was modernist mythologizing, of course.² Still, discerning the lineage of an art that so thoroughly jettisoned all artistic conventions and blurred the lines between poetry and music and even between meaningful sound and noise remains hard. “Tatatata **PUU PAMPAM PLUFF** zang-tumb-tumb.”³

Yet behind the bold assertions of discontinuity the avant-gardists concealed a great secret paradox: their acute sense of continuity. The futurist lineage passes through French vers libre, invented by Gustave Kahn, mentor and patron of F.T. Marinetti.⁴ The links between Kahn and Marinetti have been duly recorded by scholars, but without much elucidation of what futurist words-in-freedom (*parole in libertà*) owed to free verse (*vers libre*).⁵ To grasp this relation, we need an improved historical account of vers libre.⁶ As Paul Valéry remembered some fifty years later, the invention of vers libre owed much to the laboratory turn in the study of language, the attempt to turn philology away from the textual artifact and toward spoken language as an *in vivo* object of laboratory study using graphical recording methods.⁷ Experimental phoneticians made poetic verse a part of their study, beginning with Ernst Brücke’s *Die Physiologische Grundlagen der neuhochdeutschen Verskunst* (1871) in the German-speaking world and Paul Pierson’s *Métrique naturelle du langage* (1884) in France.⁸ French poets followed the linguists’ turn to living language with their own campaign for new verse forms rooted in oral culture and the arts of declamation, rather than the traditional as-read meter of alexandrine poetry. As a form of oral, as-spoken poetry, vers libre launched a new emphasis on public performance and forged new ties with popular culture, from the folkways of the ancient chanson to the cabaret performances of the Parisian demimonde.

The laboratory turn in poetry formed a flank of a wider Parisian avant-garde attempt in the 1880s to forge radical new forms of art based on the investigation of the human sensorium. Poetry, long anchored in the written page, would become an art of the voice and ear, its forms calibrated to the physiological thresholds of articulation and audition. Like their friends the neoimpressionist painters, who experimented with an art based on the physiology of line and color perception, the *vers-libriste* poets sought an art based on the externalization of the human sensorium, a projection of functional human physiology into freestanding artworks. The artists imagined—and took steps toward realizing—a new public sphere organized around the properties of free, dynamic, and harmonious bodily senses.⁹
Two decades later the efforts of the generation of 1886 seemed vastly insufficient to Marinetti and his futurist comrades. Marinetti’s 1909 proclamation of futurism’s arrival, *The Foundation and Manifesto of Futurism*, was accompanied in its book form with an international survey on the state of free verse, *Enquête internationale sur le vers libre*. This paradoxical gesture of proclaiming emancipation from the past and all precursors while offering a veritable *festschrift* to Kahn implied the noble demise of the art of vers libre as the necessary condition for the birth of the new futurist art, suggesting that *parole in libertà* was but an extension, perhaps a *reductio ad absurdum*, of the vers libre imperative to collapse meaning into the properties of sound. The futurism of 1909 would finish the job of the symbolism of 1886, eradicating all remaining conventions left in verse and the arts of declamation, removing all fetters holding back the staging of the raw, naked, amplified human sensorium.

Yet from the futurist standpoint the human sensorium had changed in two decades of technological acceleration. It fell to Marinetti and comrades to acknowledge that the growth of the technological world from the extension of human physiological capacities was possible because the human sensorium was itself already a technological object. By sweeping away all remaining artistic conventions, futurist performance art enacted a vision of the human sensorium as a set of transducers in a field of colliding solids, liquids, and gases, collecting and retransmitting vibrations. Futurist “action-art” was the performance of the act of mediating between technical senses and the world of their extension.

Marinetti’s radicalization of the formal and technical imperatives of vers libre took shape within a broader context of pan-European discussion of political aesthetics shaped by the 1886 symbolist-anarchist physiological aesthetics. By around 1909 the public sphere organized around physiological senses had become a given among many thinkers. An informal pan-European colloquy featuring, among others, Remy de Gourmont, Julien Benda, Georges Sorel, Henri Bergson, and Marcel Jousse in France; Theodor Lipps and Wilhelm Worringer in Germany; Jose Ortega y Gasset in Spain; and T.H. Hulme and Wyndham Lewis in Britain, increasingly turned to discussions of the sensory experience of art, specifically the physiology of ear and eye, to find evidence for principles of political order. Where Kahn and the avant-garde of 1886 had called for a verse form that would unite the senses and society through the recovery of sonorous rhythm, the new voices sought to relocate authority in a different sensory register, positioning a severe aristocratic eye to divide what the popular ear brought together. In this struggle the futurists and the Zurich dadaists held true to the primacy of the acoustic art as part of a rearguard action against the hegemony of the eye and...
the purely visual arts, radicalizing the values of 1886 by strenuously linking vocal and acoustic performances with the production of the social bond.

**Vers Libre and the Symbolist Moment**

*I do indeed bring news, the most surprising news. Such a case has never been seen.*

*Verse has been dealt a blow.*

*Governments change, prosody always remains intact: whether because during revolutions no one notices it or because the coup does not impose itself with the opinion that such a dogma can change.*

—Stéphane Mallarmé, 1894

Mallarmé’s tiding to his British audiences in 1894 told of events already well known in France: a revolution had finally arrived in French verse, against all expectations; it came through the efforts of Mallarmé’s younger colleagues, especially Gustave Kahn and Jules Laforgue, who took their revolutionary inspiration from anarchist doctrines. While anarchist prophets like Pyotr Kropotkin and Jean Grave preached the dismantling of threadbare political and social institutions such as the senate and the stock exchange, and less patient anarchist foot-soldiers dynamited public opera houses and cafés, the comrade-poets made their contribution by delivering a bomb to the frayed institution in their charge: the rules of prosody. This meant demolishing the classic form of French poetry—the alexandrine—in favor of a freer and more harmonic verse form. French prosody, since its painstaking codification by Malherbe in the early seventeenth century, had shown greater staying power than most French institutions. The alexandrine—a twelve-syllable line divided into two halves (the hemistichs) by a pause (the caesura)—had changed little from the classical period until the romantics. Even the poets of *vers libéré*, such as Baudelaire, Verlaine, and Rimbaud, left the core of alexandrine syllabism intact while loosening the form with rhyme and end-of-line accentuation.

Vers libre came into existence in 1886, the annus mirabilis of the fin de siècle French avant-garde. This was the year of several symbolist literary manifestos and even more reviews devoted to symbolist, neoimpressionist, and other avant-garde movements. The manifestos—Kahn’s “Réponse des symbolistes,” Jean Moréas’s “Le symbolisme,” and René Ghil’s *Traité du verbe*—superficially bore much in common and were easily lumped together, but before long their fundamental differences emerged. Under the big tent of “symbolism” they shared a
common intention to make music their artistic model and inspiration, seeking, in Paul Valéry’s description, “to draw from language almost the same effects as purely sonorous causes produced in nervous beings.”¹⁷ But each took divergent approaches to this objective. Moreas’s treatise, which garnered the most public attention and made him the public figurehead of the symbolist movement, called for a new rhythmic fluidity, for example, but his precepts did not go beyond received vers libéré.¹⁸ Ghil proposed la méthode évolutive-instrumentiste, appealing to psychophysiology for a science of phonetic associations that would establish stable correspondences between vowel sounds and colors and between vowel sounds and instruments of the orchestra. But Ghil’s rhythmic structure remained predominantly alexandrine, and his scientific ideas pure fantasy—at least in the opinion of Kahn and Charles Henry.¹⁹

Vers libre eludes easy definition.²⁰ It designates a form of poetry liberated from the laws of rhyme, meter, and especially syllabism, relying instead on rhythmic units. By establishing a distinction between meter and rhythm as the difference between that which is measured and the factor that measures, two kinds of verse arrangements are found possible, rhythmic and metrical. The technical innovation that opened a radical new approach to poetry, a kind of “free verse” (as the term was translated into English), is the key concern of this paper. But the technical distinction between rhythmic vers libre and traditional metrical poetry also opened an oppositional space within the institution of poetry, a counterworld for artist-revolutionaries who sought new spaces of freedom in the secessionist art salons and, especially, in the unregulated demimonde of cafés-concerts and cabarets.²¹

Kahn’s vers libre allied closely with its painterly sibling neoimpressionism, also called impressionnisme scientifique, whose proper names also appeared in 1886, coined by the critic and anarchist Félix Fénéon.²² Both vers libre and impressionnisme scientifique were invented within the same circles and were vigorously promoted in journals such as La Vogue and La revue indépendante. Kahn and Fénéon founded La Vogue in 1886, proclaiming in the opening editorial that “the social revolution will come; all the coalitions [against it] will only serve to bring it about.”²³ Like the neoimpressionist painters, Kahn and Laforgue developed their conception of vers libre with the help of the so-called scientific aesthetics of Charles Henry.²⁴ Vers libre, Kahn announced in “Réponses des symbolistes,” derives from “an adherence in literature to the scientific theories constructed by induction and controlled by the experimentation of M. Charles Henry,” and “analogous reflections [that] have created the multi-tonal tone of Wagner and the latest techniques of the [neo-] Impressionists.”²⁵
Henry’s writings joined a pan-European wave of studies in physiological aesthetics in the late nineteenth century. Works by scientists on the physiology of elemental artistic media, from Hermann von Helmholtz, Ernst Brücke, and Gustav Fechner to Michel Eugène Chevreul and Alexander Bain, suggested that the laboratory offered new approaches to the study of art. Other works, like Grant Allen’s *Physiological Aesthetics* (1878) and Jean-Marie Guyau’s *Problèmes de l’esthétique contemporaine* (1884) joined the physiological and psychophysical approaches with Spencerian, Darwinian, or Haeckelian evolutionary perspectives to chart the direction of evolving human sensibility as it pertained to the arts.

Henry’s approach followed broadly in this vein, combining psychophysics with a neo-Lamarckian physiology, but with the more ambitious aim of releasing new energies and generating new forms of experience among both artists and their audiences. The time was ripe, he argued, for a psychophysiology of the arts:

One could not study the subjective impression of movements, of colors, of musical and articulated sounds, when natural philosophy had not yet distinguished, classified, and formulated its objects, when nothing was known about the composition of forces, the decomposition of the spectrum, the nature of musical intervals, of consonants and vowels, when the physiology of the nerves was not yet anticipated, when the sense of the evolution of language was absolutely lacking.

Painting and design, music and poetry could be analyzed as physiological equivalents of force expressed in the formal elements of artistic media: line, color, and tone. These force-equivalents of elemental media could be analyzed physically through graphical methods. Moreover, Henry insisted, following recent work in psychophysiology, their effects could also be understood as physiological graphics, either through the ways in which the ear or eye acted as transducers of waveform sound or color or through the internal transmission of sensations through physiological pathways in the body.

The ideomotor pathways built a two-way street between creative artist and beholder. The artist provided the active, motor equivalent to the passive, sensory experience of the artwork. “The artist,” Henry wrote, “is but an eye, an ear, a nervous system normally organized and developed” that senses a rhythm out of an “infinity of more or less invisible rhythms,” realizes it virtually as an idea, and produces it externally. What rendered the idea manifest in the symbolist artwork was its capacity to make the primordial rhythms of biological life perceptible to the beholder. At the same time as we perceive an object, our “internal
machinery” re-creates it in internal muscle sensations. In his version of the ideomotoric theory of cognition, Henry observed that thanks to eye movements, to phenomena in our vascular and muscular systems, and to our breathing, “there is no idea without virtual, then real, movement.” This, he added, was our “natural mechanics,” the result of our long evolutionary history.29

For Henry, the condition for the possibility of this scientific aesthetics was the invention of graphical recording methods.

Now all phenomena are translatable by the graphic method . . . this is the course to follow if one wants to know the aesthetics of things . . . . They are comparable and perfectible with the usage of more and more delicate apparatus and more and more precise media of observation.30

Graphical recording, as Henry conceived it, functioned as a kind of amodal sense perception, a sixth sense that could apperceive the qualities of sensation that are primary in that they do not belong exclusively to one sense alone, as color belongs to vision, but are shared by all the senses.31 Through the amodal sense, common qualities of perception could be abstracted from any sensory mode and then translated into other modalities of perception. A rhythm—a temporal distribution of recurring intensities—could be delivered in or abstracted from sight, audition, smell, touch, or taste. This meant that the rhythm had to exist at some point in the mind in a form that was not inextricably bound to one particular mode of perceiving it but that remained sufficiently abstract to be transportable across modalities. The graphic method provided that rhythm because, according to Richet’s ideo-motor theory, it furnished sensation to the mind in the form of the idea, which was the basis of a perceptually unified world. In Henry’s version the amodal sensus communis would also be capable of delivering vitality affects, what late nineteenth-century physiology called dynamogeny and inhibition, conditions of generalized affective stimulation or suppression.32

Decomposing all aesthetic phenomena into physiological graphics meant that the language of physiology and, especially, the technical idiom of graphical recording would infiltrate, even dominate, the new language of art. Rhythm, measure, and caesura would become critical terms in the new art, essential to the description of all aesthetic experience precisely because the elemental media were transmitted in periodic waveform signals for which these were key categories of analysis. Hence, graphical methods as conceived by Henry’s physiological aesthetic would encourage an impulse toward abstraction in visual arts and verse alike.

The ultimate stake of this amodal sense concept was the unity of the senses,
the idea that the world as seen is the same as the world as heard or felt. Within
the anarchist-Wagnerian strain of the French avant-garde the reconciliation of the
senses bore strong political meaning as the recovered unity of senses alienated
by modern capitalist conditions was joined with a notion of the reunification of
the separate arts and artistic media in the Gesamtkunstwerk, what Henry
described as the aesthetic object “at once pictorial, symbolic, and poetic, of
which [Richard] Wagner is said . . . to have dreamed.”

Language in Lines

_C’est de la physiologie, du haut en bas, que je chante._


To Kahn fell the matter of working out these ideas for poetry. He began with the
recognition that prosody was, after all, nothing other than the poet’s method of
controlling the reader’s temporal experience of the poem. Rhythm in poetry had
traditionally been something that occurred as an effect of the temporality of
prosodic organization. Kahn’s innovation consisted in his attempt to think of poetic
rhythm largely outside the rules of prosody, as the temporal distribution of
elements of language, especially spoken language, such as timbre (in recurrences
such as alliteration, assonance, and rhyme), duration, pitch or intonation, and
intensity or volume.

Physiologists in the 1870s had begun to use inscription devices to visualize the
temporal array of these elements of speech in graphic form. Henry’s precious
insight was that these inscriptions would enable the poet to reimagine prosodic
effects as “shapes of energy,” just as the painter would view visual form. “The
remarkable graphic method of tracing vowels and consonants,” Henry claimed,
“would enable poets to apply the theory of rhythm to these perfectible graphics”
and to “gauge scientifically the natural rhythm of language and . . . measure pre-
cisely the agents of phonetic transformation.”

Reconfiguring painting and design in the language of physiological curves was
relatively easy because visual arts contained linear elements that constituted an
essential part of the artist’s training, skill, and everyday work. Verse, similarly,
had to be regarded as _language in lines_—an assumption akin to Jeremy Bentham’s
practical definition that when the lines run all the way to the right margin it is
prose, and when they fail to do so it is verse. Lineation made possible the ren-
dering of verse in the periodicities of graphically recorded curves. Thus, Henry
argued, the scientific aesthetic would serve poetry by undertaking a classification
of rhythms, or what Henry called “the science of possible metaphors,” where metaphor was defined as “the relation which links two more or less similar changes of direction: the more subtle and profound the changes, the more complex the formula, and the more beautiful the metaphor.”

Kahn rendered Henry’s somewhat bizarre notion as a powerful idea. Graphical recordings of spoken verse could replace traditional scansion, the method of dividing verse into its metrical feet. Instead of scanning syllables, poets might record and examine the rhythms and caesurae that appeared “naturally” in the graphical recordings of the verse. The basic operations of the scientific aesthetic might be further applied to poetry in a manner similar to painting, providing a radical new foundation for the craft of versification.

This idea was not entirely new. The fledgling science of experimental phonetics, which centered on graphically recording the vowels and consonants of ordinary phonation, had recently begun to take on the analysis of verse. Henry and Kahn had encountered the graphic recording of human phonation in the Collège de France lectures of the physiologist Étienne-Jules Marey and the linguists Gaston Paris and Michel Bréal. Marey’s phonetic research consisted in graphically recording the physiological functions connected with the acts of speech: the movements of the lips, larynx, and thoracic cage, and the air pressure within the lungs. The vocal polygraph recorded all three. The sounds it recorded were taken from the Pratisakhyas, Vedic treatises on proper enunciation. Marey inherited the interest in the Sanskrit texts from Ernst Brücke, who noted that unlike Greek and Latin writers who divided up sounds into vowels and consonants, the Vedic authors distinguished between sounds that were mute or silent and sounds that were articulated and indicated the anatomical parts from which each sound emanated.

Phoneticians turned to verse as part of these experimental investigations. Brücke’s study of new High German verse paved the way. He noted how odd it was that the rules of German prosody and metric were so skillfully taught and employed even though their underlying principles were highly contested. Some of this had to do with the clarity and elegance of classical Greek and Latin models from which German prosody was derived, even when the prosody failed to correspond to the “verse that the living mouth speaks and the living ear hears.” Brücke declared these classical prosodic models to be of as little interest to him.
as Galenic anatomy: the laboratory, not texts, would be his guide to verse. He used a kymograph to record the mathematical time relations of anapests, spondees, caesuras, and accents, demonstrating that the natural laws of meter for the German tongue make certain verse forms borrowed from the classics logically unusable, and others, hitherto unknown, possible. Moreover, Brücke argued, the experiments showed that natural subrhythms emanated from the muscles of the chest, larynx, and other organs, offering rich possible effects in the art of verse declamation.

For Kahn and Henry these studies pointed the way to a revolution in verse. Brücke’s contention that classical verse models were unsuited to the character of spoken German could extend to the “artificial” French alexandrine as well. Even though French was a Latin-derived language, alexandrine-based versification remained, in the words of the linguist Gaston Paris, “petrified” in the pronunciation of the sixteenth century. French poets remained stifled by this gap between the living tongue and the official poetic language that arbitrarily constrained them like an antiquated legislature. Vers libre would follow the linguists’ turn to living language for its material, finding its voice in oral and primitive poetry, disregarding the arbitrary laws imposed on the classic verse, rejecting Greco-Latin vowel-consonant syllabism for Indo-Sanskrit distinctions of sonority and muteness. Where traditional scansion relied on the different lengths of vowels and the armature of consonants in as-read verse, Kahn suggested that verse be conceived primarily as spoken, with the graphical features of recorded speech—rhythm, measure, duration—taking the place of scansion in the measurement of prose.

Kahn framed his theoretical argument for vers libre within a historical and evolutionary consideration of early poetic schools that sought liberation from the alexandrine. They missed the point, he argued, by clutching at a few innovations like the caesura, enjambment, and the French mute e (e muet), instead of developing a definite idea of the nature of verse. Verse is an organism, Kahn contended, and as such it has an organic unit, “la cellule métrique.” He argued that to think of the alexandrine as just a verse composed of twelve syllables, with a pause at number six and a rhyme at number twelve, was erroneous. The anatomy of verse is different, so much so that the great poets did not make the caesura the pivot of their prosody. The poets felt, more or less instinctively, the organic composition of the verse and empirically applied the principles adequate to its true nature. In Racine, La Fontaine, and Molière, the caesura became a stressed syllable without a pause and sometimes a syllable of secondary importance.

To illustrate this, Kahn analyzed the opening couplet of Racine’s Athalie.
According to the traditional metric, these verses are scanned as two hemistichs of six syllables each.

Oui, je viens / dans son temple / adorer / l’Eternel,
Je viens, / selon l’usage / antique / et solennel.

Kahn argued that the traditional scansion demonstrates that the lines were formed with four blank verses, thus:

Oui, je viens dans son temple adorer l’Eternel
Je viens selon l’usage antique et solennel.

“If one pushes this investigation further,” Kahn wrote, “one discovers that these verses are scanned thus”:

Oui, je viens—dans son temple adorer—l’Eternel
Je viens—selon l’usage—antique—et solennel.

Kahn described the traditional scansion as a “first verse composed of four ternary organic cells and a second verse composed of two binary organic cells alternating with two quaternary organic cells.”

Kahn argued that this proved the caesura was a creation of the prosodic legislator (Nicolas Boileau)—“pure arbitrariness, . . . the will of a spoiled critic,” Kahn wrote—and had no part in the poet’s composition of the verse. Racine composed with a great artist’s instinct for the “cellule organique” of verse—or perhaps by lucky accident. Either way, the reliance of traditional scansion on the different lengths of vowels and the armature of consonants in as-read form thus appears as an arbitrary imposition upon the real working methods of the classic poets. They intuitively understood composition as a number of vowels and consonants that possess a unity for the ear and a unity of sense, or, in Kahn’s borrowing of Henry’s language of graphical representation, “the smallest possible fragment, tracing an arrest of voice and an arrest of sense.” In other words, this is a rhythmic impulse, “housed in the individual measure, the organic and independent cell,” whose terminal boundary is marked by the coincidence of a juncture in meaning with a juncture in rhythm.

Kahn dismantled the tyranny of syllables (and their principle of number), and of rhyme. Without the artificial mechanisms of rhyme and the fixed metrical perspective of line, phonic elements might freely associate on the basis of new principles derived from acoustic kinship or affinity. Assonance and alliteration were among the qualities that would invite associations in verses like,
Des mirages / de leur visage / garde / le lac / de mes yeux.  

Here Kahn’s emphasis on verse-music found its voice in an analogy to the Wagnerian injunction against prefabricated music and for allowing music to build organically out of its simple elements, such as a chord or arpeggio, combining “not as masses knitted together, but allying naturally like parent atoms.” Kahn used a similar parental metaphor. “To assemble these unities and to give a sense of cohesion to the verse they form,” he wrote, “they must be married in (apparenter). These items are called alliterations, either a union of parented consonants or assonances by similar vowels.”

Sound patterns had always been important in verse, but they had rarely been determinant of rhythm.

Once the rhythmic autonomy of the measure was restored, it became necessary to consider the relation between the measure and the stanza (strophe) and the grouping of verses more generally. The stanza cannot remain “a closed grid,” Kahn insisted. No one form can express all sentiments, emotions, and thoughts. The stanza thus requires a liberty equal to that of the verse, elastic and flexible. In fact, one should not need to codify verse in stanza at all—the verse should take the form of the accent and its intensities, the duration of the sentiment evoked, or the sensation rendered. Following such a conception, Kahn observed elsewhere, one finds “in the graphic representation of a stanza the schema of a sensation . . . the tendency is toward a poem in prose that is very mobile and patterned rhythmically according to the velocities, the oscillations, the contortions and the simplicities of the Idea.”

We have no extant graphic recordings of verses by Kahn or Henry and therefore cannot point to experimental evidence for the composition of poems (unlike the followers of Kahn discussed below, or painters like Seurat and Signac, for whom such evidence does exist). But graphical recording almost certainly served as a heuristic model for recovering the primary oral and aural nature of verse from the written and eye-read text. To define the ways in which voice inhabits and impels text and produces emotion, idea, and sensation, Kahn introduced the concept of “accent d’impulsion,” the enunciatory drive of the poet to inscribe the voice in the poem, “to write his own individual rhythm in place of donning a uniform tailored in advance.” In direct analogy to speech curves, the lineation in free verse poems served to trace out the changes of momentum, intonation, and tone propelled by the accent d’impulsion.

In Kahn’s view, the newfound awareness of accentuation, an outgrowth of the discovery of the primacy of the colors of phonation, necessitated free verse, a kind of poetic prose, “rhythmmed and numbered with a sort of music.” Kahn’s
mobile poetic prose, in works such as his *Les palais nomades* (1887), led the reader through a protocinematographic sequences of images, calibrated modules of arrests of rhythm and sense that conjured fluctuations of reminiscences with varied intensities and durations, driven forth by the poet’s inner psychological rhythm.

Kahn’s formulation of vers libre suggested a new way to define rhythm outside of the moorings of traditional prosody. Rhythm in vers libre, as Camille Mauclair described it, was “entirely physiological: the beat of the arterial blood, the amplitude or the constriction of respiration, according to the emotion, are the natural impulsions.”57 Unlike vague symbolist analogies to music, physiological rhythms rooted the invention and audition of verse in a solid yet open-ended field of possibilities. Executed properly, Mauclair quipped, vers libre was to the alexandrine “what a Schumann *Lied* was to a polka.”58

Physiology, as a science of law-like regularities in the animal body, might have been taken to offer a kind of uniformity to poetry. This was true, up to a point. But the vers-libristes agreed with French scientists and philosophers that human personality—individual differences—hinged on an array of personal equations that defined personality, temperament, and quality of thought.59 “There are as many kinds of vers libre as there are poets,” Mauclair noted, “and the music of each is unique.”60 Physiology was the generator of rhythm, but in order for verse to be truly free it had to be autonomous: it had to unfold out of the properties of the rhythm itself.

It is the poem that makes itself according to its intimate logic, and not the poet who sits down with the intention of making a poem and filing down syllables like fingernails. . . . It arrives in what the physiologists call the curve of cardiac rhythm, generator of the transcribed rhythm, which the state of the regular or symmetric verse presents itself, before or after, the polymorphic state.61

On this view rhythm might be thought to come before the words in the poet’s sensorium. But, on this account, rhythm might also be said to stand above the words and to persist after them. If verse were to gain a newfound autonomy through rhythm, that autonomy might have to come at the expense of language itself.

While they took inspiration from the aesthetic examples of Wagner and Schumann, the vers-libristes found ready-made pulsing fluidity in popular song. Nearly all early French vers libre poets took an interest in popular song and produced their own equivalents, whether the medievalizing chansons of Kahn and Jean Moréas; the rounds and rustic songs of Francis Vielé-Griffin, Maurice Maeterlinck, and Louis-Gabriel-Charles Vicaire; or the cabaret songs of Laforgue.
Especially when unacceptable traces of folkishness were removed, popular song proved perhaps better than any theory of versification the claim that the innovations of free verse were founded on tradition and that the rules of classical French prosody were external and artificial. Never having succumbed to the alexandrine discipline, French chanson populaire remained essentially rhythmic, with the number of syllables subordinated to rhythm, and assonance taking the place of rhyme. Popular song typically treated language as highly malleable, extending, truncating, or yanking it into new shapes at will, impulsively achieving the liberation of rhyme into the half-rhyme, repetition, and rhymelessness so ardously mandated by free-verse theorists. Viewed through its close alliance with primitive song and music, the otherwise complex and refined art of vers libre revealed a hidden simplicity and spontaneity that sprung from intuition and instinct.62

Around the same time several vers-libristes formed alliances with the Collège de France’s newly established experimental phonetics laboratory headed up by the linguist Abbé (Pierre-Jean) Rousselot. The poets Robert de Souza and André Spire, working together with the linguists Georges Lote and Eugène Landry, used Rousselot’s apparatus to analyze modern pronunciation of the alexandrine and to experiment with new verse forms. With instruments such as Rousselot’s phonoscope they set out to make scansion an experimental science, intending to “resolve rhythm as one does in phonetics, into its physical, physiological, and sociological parts.”63 For studies of the alexandrine, they brought in master enunciators, luminaries of the French stage such as Sarah Bernhardt and Benoît-Constant Coquelin, who read verse from the whole field of French literature. Studies such as Landry’s La théorie du rythme et le rythme du français déclamation (1911) and Lote’s gargantuan three-volume L’alexandrin d’après la phonétique expérimentale (1913–1914), marshaled copious graphic traces and quantitative tables to show that the alexandrine is really not a twelve-syllable line, as the absolute law of French prosody maintained. Rather, it constantly varies from nine to fourteen syllables, the strictness and scrupulousness of the poet notwithstanding. The studies made manifestly clear how unfounded was the old theory that the alexandrine depended on the number twelve because that number held special magic for the French. Declaimed French, Landry and Lote argued, possessed a deeper tendency to follow an implicit generative rhythmic pulse—as Kahn had long argued.

For de Souza and Spire, the laboratory provided an opportunity to examine by day the tumultuous declamatory rhythms that filled the cafés-concerts and cabarets by night. Sounds and rhythms heard in the Chat Noir were seen in the College de France laboratory, where the poet/linguist took up the task of what

T.S. Eliot called “purifying the dialect of the tribe.” The sounds and rhythms of the “café-conç” typically involved arabesques of gestures and brusquely immobilized postures, pantomimes and imitative contagions of rhythmical convulsions drawn from the popular images of hysterical bodies out of control. Yet for every zig, zag, paf! given to the eye of the beholder an equally rich archive of phonetic gestures had developed in and through the distinctive literary forms of the café-concert. The enunciatory style of this mode of declamation valorized extreme suppleness, bending and shaping language to musical and rhythmic effects, with the French e muet as the most critical variable. De Souza and Spire graphically recorded all varieties of e muet. Lines like “Fluid’ et douc’ caress’ d’cendr’ bleue” revealed several e’s hidden beneath the silent written vowel, all pronounced with variable timbres, pitches, durations, and intensities. For de Souza and Spire the laboratory was the touchstone of a campaign to make the e muet and related aspects of the caf’-conç style part of respectable declaimed French, bringing the transgressive rhythms of the nocturnal demimonde as a counter to the stifling bourgeois institutions of poetry. This was the original intention of the vers libre revolution, but now it gained leverage in the metrological power of the laboratory. Just as the physiological measurement of human reaction times and “personal equations” held together countless technosocial systems, so the calibrated rhythms of speech would bring aesthetic and social life into a new modernist harmony.

Onomatopoeia and the Futurist Moment

Within the cabaret culture, symbolist declamatory arts reached their consummation and liquidation as sacralized Wagnerian poetics gave way to a dithyrambic modernism based on imitative contagions of speech and gestural tics simulating hystero-epileptic bodies out of control. Here F.T. Marinetti made his literary debut after Kahn secured him a literary prize in 1898 and arranged to have his award-winning poem recited by Sarah Bernhardt at the Théâtre de l’Odéon. Although Marinetti found Bernhardt’s rendering of his verse “a little monotonous due to her usual way of reciting alexandrines,” the young poet took up the declamatory art with passion, regularly touring over the next decade in the cabaret circuits of France and Italy, later proclaiming the variety theater and its “body-madness” the birthplace and true home of futurism.
In 1909, after a decade of working as a touring cabaret poet and anarchist troublemaker, Marinetti unleashed the battle cry of futurism, publishing the *Foundation and Manifesto of Futurism* in newspapers across Europe. He also published the manifesto in a combined book edition with the *Enquête internationale sur le vers libre*, a survey of the state of free verse poetry that both canonized it as a critical avant-garde movement and signaled its supercession by futurism. The timing of the joint publication, which was partially due to delays resulting from Marinetti’s automobile accident in 1908, has seldom been noted, but it provided a symbolic torch-passing gesture within the avant-garde.

One of the overriding lessons of the *Enquête* was that the French crisis in verse had become international and therefore universal in its implications for poetry. Although quarrels over vers libre remained, the idea that rhythm remained essential to it, and to all future poetry, was widely accepted. In later manifestos Marinetti promoted his futurist poetic doctrines as an evolutionary transformation of vers libre into a radicalization of the rhythmic imperative, paring vocal rhythm down to its atomistic essence and embedding it in a full-fledged performance sound art perfectly suited to the futurist variety theater. While his futurist verse technique, *parole in libertà*, broke all ties with symbolist atmospherics—“moonlight” banished, epicene bodies pummeled with brass knuckles, “ritual pomp” killed off wherever it was found—it also radicalized the phonetic and psychophysiological conceptions of vers libre, leaving only “art, this extension of the jungle of our veins that pours from our bodies into the infinity of space and time.”

In the “Technical Manifesto of Futurist Literature,” Marinetti announced with his usual bombast, “in an airplane, sitting on the fuel tank, my belly warmed by the head of the pilot, I realized the utter folly of the antique syntax we have inherited from Homer. A furious need to liberate words, dragging them free of the prison of the Latin sentence!” This had been more or less the project of the vers-libristes. But now the radical poets of 1886 appeared still too imbued with the antique rules of prosody, despite having delivered a mighty blow to meter and syllabism. “There have been a thousand reasons for the existence of free verse, but now its destiny is to be replaced by words-in-freedom.” Where vers libre had destroyed the conventions...
of meter and elevated rhythm and the affective features of voice as the vehicles
of meaning, parole in libertà sought to smash the last stifling supports of signification
in grammar and syntax maintained by the vers-librèstes. “As poetry and
sensibility have evolved,” Marinetti charged, “two irremediable defects of free
verse have become apparent:

1. Free Verse fatally urges the poet toward facile, sonorous effects, transparent
tricks with mirrors, monotonous cadences, a ridiculous clanging of
bells and the predictable ripostes of internal and external echoes.

2. Free Verse artificially channels the flow of lyrical emotion between the
great walls of syntax and the locks of grammar. Free, intuitive inspiration,
which is directed straight at the intuition of the ideal reader, thus finds itself
pent up and distributed, like drinking water, to slake the thirst of all obsti-
nate, finicky intellects.\(^{75}\)

Syntax had been the last refuge for some symbolists, most famously Mallarmé,
who wrote, “What pivot, I understand, in these contrasts, for intelligibility?
There must be a guarantee—Syntax.”\(^{76}\) Marinetti rejected this, proclaiming that
poets must no longer arrange “words syntactically prior to hurling them forth.”\(^{77}\)
Besides the elimination of syntax, the futurist poet should also jettison all other
remaining supports of the traditional Latinate sentence: articles, pronouns,
prepositions, conjunctions, auxiliary verbs, even punctuation.

But how to cultivate futurist inspiration and intuition? Marinetti imagined the
futurist poet as an ordinary lyrical temperament who would spontaneously
emerge after finding himself in an “area of intensified life (revolution, war, ship-
wreck, earthquake, etc.)” and would instinctively compose in the futurist manner.

He will begin by brutally destroying syntax as he talks. He won’t waste time
building sentences. He won’t give a damn about punctuation and finding
adjectives. He will ignore linguistic subtleties and nuances, and in his haste
he will breathlessly fling his visual, auditory, and olfactory impressions at
your nerve ends, precisely as they strike him. The vehemence of his emo-
tional steam will burst the conduits of the sentence, the valves of punctua-
tion, and the adjustable bolts of adjecivation. Handfuls of essential words
in no conventional order. The sole purpose of the narrator is to convey all
the vibrations of his being.\(^{78}\)

On Marinetti’s telling, the transition from vers libre to parole in libertà unfolded
less from deliberation than from the necessities of communicating under the
extreme conditions of modernity. Although the technique of free verse might
have sufficed in 1886, the newer material collisions of everyday life produced a
different soundscape and a different sensorium and therefore entailed a different
poetics. Marinetti understood the innovations of vers libre as part of an incipient
industrialization of language. *Parole in libertà* would further this process by elim-
inating frictions and introducing new efficiencies into prosody.

The key concept was onomatopoeia, which thoroughly collapsed sound and
meaning, and accelerated the velocity of verbal communication.

Our growing love for matter, the will to penetrate it and to know its vibra-
tions, the physical bonds that tie us to machines, urge us to *the use of
onomatopoeia.* Sound, which results from the rubbing together or the collision
of solids, liquids, or gases at speed, requires that onomatopoeia, the reproduc-
tion of sound, be one of the most dynamic elements in poetry. And as such,
onomatopoeia can take the place of the verb in the infinitive, particularly if
it is set against one or more other onomatopoeias. (E.g., the onomatopoeic
*tatatata* of machine guns opposing the *urraaaaah* of the Turks. . . . The
brevity of the onomatopoeic words in this case allows us the use of the most
versatile interweaving of rhythms.79

Onomatopoeia produced efficiencies by condensing phonic units to their small-
est dimensions, allowing the emergence of a recombinant phonetics in which
“our lyrical intensity must be free to dismantle and remake words, cutting them
in half, extending and reinforcing their centers or their extremities, increasing or
reducing the number of their vowels and consonants.”80 Such basic phonetic
units would better realize the desideratum of an acoustic art organized around
the subrhythms of the voice and organs of phonation.

Marinetti’s doctrine of onomatopoeia fused a Bergsonian notion of musical
suggestion or empathy with the modern soundscape. Since the symbolist
moment of 1886 the two-way street of ideo-motor theory and related doctrines of
imitation and suggestion had entrenched themselves in the performance cultures
of French and Italian cabaret, where machine-like tics of language and gesture
became the vernacular representations of unconscious automatism. For the futur-
ist narrator who sought “to communicate all of the vibrations of his being,” the
two-way street was now crowded with “an unending exchange of intuitions,
rhythms, instincts, and metallic discipline” resulting in motorcars, airplanes, and
phonographs without and a new technical sensorium within.81 Hence Marinetti’s
boisterous claim in the “Technical Manifesto of Futurist Literature” that dicta-
tion taken from the propeller of his soaring biplane suggested that Homeric syntax
be replaced with found sound.82
Onomatopoeia emerged as the unavoidable medium of dictation from the technological soundscape. Following the laws of onomatopoeia, the material body of the word mimicked the essence of the referent—this was the passage through the door opened by the phonetic investigations of the vers-libristes. Phonic shards would gain meaning by blending with the “onomatopoeic orchestration or compendium of noises.” Marinetti then passed to the next stage: hearing the sound drew the auditor into visceral union with the phoneme, with the object presented under the form of the word. Such a poetic soundscape would offer the possibility of reaching a “psychic onomatopoeic orchestration, the resonant yet abstract expression of an emotion or of pure thought.”

With all extraneous elements stripped away, the power of an acoustic art was all that was left, kinships of assonance or alliteration coming together or apart, binding the sentient listener to the material field of language voiced aloud; in Marinetti’s words, “the lyrical continuation and transfiguration of our animal magnetism,” a vast undifferentiated aural expanse “spreading itself in universal vibration” and dissolving the self empathically within it.

Marinetti found his muse in the Battle of Adrianople in the First Balkan War (1912–1913), where the clamor of “onomatopoeic artillery” enabled him to transmute flying shrapnel into the hurling phonic shards of the poem “ZANG TUMB TUMB.” He reported that he “finished that short synthesizing noise-making poem while witnessing the machine-gunning of three thousand horses ordered by the Turkish general”—the image of nineteenth-century horses annihilated by twentieth-century machines building an exact analogy to the effects of his own lyric. “ZANG TUMB TUMB” took oral recitation far beyond the comparatively stuffy theatricality of the Parisian Samedis populaires where Marinetti got his start some fifteen years earlier. Wyndham Lewis attended a performance in London, listening in “astonishment at what Marinetti could do with his unaided voice.” Lewis recalled that his “marinettian preparation”—the terrifying volume of noise produced by Marinetti’s performances—made his later experience of the mass bombardment in Flanders “all quiet” by comparison. Marinetti’s own description, from his “Dynamic and Multichanneled Recitation” (1916), gave some idea of what Lewis meant.

I recited several passages from my Zang Tumb Tumb: Adrianopoli in a dynamic and multichanneled fashion. On the table, arranged in front of me, I had a telephone, some boards, and the right sort of hammers so that I could act out the orders of the Turkish general and the sounds of rifle and machine-gun fire.

... My audience, continually turning so as to follow all of my movements, was utterly enthralled, their bodies alight with emotion at the violent effects
of the battle described by my Words-in-Freedom. . . .

The growing interest of the English audience turned into frenzied enthusiasm when I arrived at the peak of my dynamic performance, alternating the Bulgarian song “Sciumi Maritza” with my dazzling images and the rumble of the onomatopoeic artillery.  

The onomatopoeic clamor had varying effects on the auditors who heard Marinetti’s performances across Europe. The war correspondent Harry Nevinson remarked that he had

heard many recitations and [had] tried to describe many battles. But listen to Marinetti’s recitation of one of his battles scenes and . . . the noise, the confusion, the surprise of death, the terror and courage, the shouting, curses, blood, and agony—all were recalled by that amazing succession of words, performed or enacted by the poet with such passion and abandonment that no one could escape the spell of listening.

Some of the most astute critics of Marinetti attacked the artistic validity of sympathetic experience through sound. After hearing Marinetti perform in London, the English critic Henry Newbolt bristled at vocal “mimicry” and the futurist’s use of imitative sound and the physical sympathy (“nervous excitement”) it induced in the auditor:

But whereas [Marinetti] mimics and declaims, the [proper] poet does something quite different. The poet changes the water of experience into the wine of emotion, not by the tones of his voice, but by the magic of ordered language. He does not give you the elements of matter and nervous excitement for you to make of them what you can; he gives you his own intuition already made, his own world already created, and so created as to exist externally, when the vibrations of the voice have long since passed into silence. The power of the Futurist . . . is gramophonic, and it has the limitations of the gramophone.

Newbolt’s charge of a “gramophonic” art shot through Marinetti’s aesthetics and struck vers-librisme, an art invented in the image of the graphical recording of sound. The question came down to “intuition,” or what happened between receiving the vibrations from the soundscape and the “imitative” repetition in the vocal performance. For Marinetti, the poet was the figure who underwent transformation in that moment, whose very “I” became reprogrammed by the propeller’s whirl so that what emerged was unquestionably something new and
evolved, not mere repetition of the “already made.”

The sensory realignment of eye and ear was as political as it was epistemological; it resonated with the artists, soon to be called dadaists, gathered in Zurich’s Cabaret Voltaire who recognized the anarchisante political aesthetics of Marinetti’s work yet utterly rejected its militarism and nationalism. As Hugo Ball, the group’s artistic leader, wrote, the very idea of dada sound poetry began with Marinetti.

With the sentence having given way to the word, the circle around Marinetti began resolutely with parole in libertà. They took the word out of the sentence frame (the world image) that had been thoughtlessly and automatically assigned to it, nourished the emaciated big-city vocables with light and air, and gave them back their warmth, emotion, and their original untroubled freedom. We others went a step further. We tried to give the isolated vocables the fullness of an oath, the glow of a star. And curiously enough, the magically inspired vocables conceived and gave birth to a new sentence that was not limited and confined by any conventional meaning. In the “First Dadaist Manifesto” (1916) Ball wrote that he wanted “no words that others have invented.” This was a problem, however, because

all words have been invented by others. I would like to add my own nonsense, my own rhythm and vowels and consonants that correspond to it. If these oscillations are seven yards long, then I want to rightly put forth words that are seven yards long. . . . Then one can really see how articulated language comes into being . . . I want to have the Word where it ends and where it begins.

Rhythm here precedes language, measures its coming and going, and persists after it.

Ball regarded modern language as corrupted, but the redemption of European culture might be found in a deeper rhythm. “Our debates,” he wrote, “are a burning search . . . for the specific rhythm and the buried face of this age . . . for the possibility of its being stirred, its awakening. Art is only an occasion for that, a method.” Much like the Parisians Spire and de Souza, who looked to the cabaret as a generator of redemptive rhythms, the Zurich dadaists used the cabaret to experimentally discover them.

In performances of phonetic poems that Ball called Verse ohne Worte (verses without words) or Lautgedichte (phoneme poems), notably the six-poem cycle “Gadji Beri Bimba,” Ball composed phonetic sequences in which the vowels
were weighed and distributed solely according to the values of the beginning sequence.

\[
\text{gadji beri bimba glandridi lauli lonii cadori}
\]
\[
\text{gadjama gramma berida bimbala glandri galassassa laulitalomini}^{95}
\]

With these he conveyed the physical substance of sound, sound as guttural rumblings, sound as voice, generated by lungs, larynx, vocal chords, tongue, and lips, producing sudden trills and sibilations. Ball regarded these phonemic sequences as “abstract” (he was thinking of Kandinsky’s recent work) and left it to the listener to grasp the cohesion offered through the rhythmicality and repetition of sounds. But unlike the auditory blast of Marinetti’s shows, the hearer of an oral performance of Ball’s pieces is invariably prompted to repeat the sounds inwardly and to find through the inner rhythm of one’s own subvocalizations what Ball’s comrade Tristan Tzara called one’s “personal boomboom.”^{96}

**Conclusion: Political Aesthetics**

Futurist and dadaist vocal arts effectively finished the job launched by the symbolist vers-libristes in 1886, eradicating all remaining conventions left in verse, collapsing all meaning into the properties of sound, removing all fetters holding back the staging of the raw, naked, amplified human sensorium. But they also intervened in a European colloquy on political aesthetics that arose after 1910, having been shaped by the physiological turn in aesthetics and vers-librisme in particular. The 1886 French avant-garde’s quest for social and political transformation by means of a sentience transformed by new forms of art had finally begun to be realized. But the question of what sort of civil governance was desirable and what ideas of political servitude and mastery were suggested by the new art led to increasing divergences in preference for the physiology of ear or eye respectively. In the French context one marker of the turn came from the pen of Remy de Gourmont, medievalizing symbolist and vers-libriste protégé of Kahn and La Vogue, who by 1899 had begun to turn the arguments of vers libre into a case for aristocratic supremacy. Gourmont shared the assumption that “the true problem of style is a question of physiology”—but which physiology and to what end?^{97}

He agreed that the voice and the ear—indeed, oral tradition—produced a rhapsodic bonding. But these were plebian senses, capable of empathic merging and unable to think and therefore insufficient to lead or direct popular poetry.^{98} Gourmont wrote in his 1905 essay “Le vers populaire” that voice and ear highlight the worst sense of musicality, one in which the plebian mind, a veritable
sensorium of acoustic impressions, shows its deformation in ways that illustrate the ear’s intellectual inferiority to the eye. This sense of musicality draws together in one sound vowels that are normally separate and introduces “deformities demanded by assonance.” Only the eye can provide the necessary kind of distance and discrimination—among the senses and in politics.  

These ideas were echoed by numerous French thinkers, such as Julien Benda, who acknowledged that “the sensations of hearing . . . cause vibration in a nervous system connected with a vital organism which lies deeper than that affected by sensations of sight.” Yet this musicality only made hearing a birthright for the lower, “plebian” orders, which Benda contrasted with the visual or plastic sensibility of an antique aristocracy. European thinkers from Wilhelm Woringer and Jose Ortega y Gasset to Wyndham Lewis and Ezra Pound voiced similar ideas, with an insistent demand for political and social hierarchy rooted in a ranking of the senses. Against these calls the futurist and dadaist performance arts appeared to have radicalized the 1886 imperatives of vers libre in order to preserve them, both as formal innovations and as the “social science” that they were created to advance. To side with the oral and aural meant advocating performance against the operations of the eye. “Zang tumb tumb” and “gadji beri bimba” were the last anarchist battle cries against the burgeoning hegemonic ocular politics of modernism.
Notes

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8. Ernst Brücke, Die Physiologischen Grundlagen der neuhochdeutschen Verskunst (Vienna: Carl Gerold’s Sohn, 1871); and Paul Pierson, Mètre naturelle du langage (Paris: Vieuweg, 1884).
10. F.T. Marinetti, Enquête internationale sur le vers libre et manifeste du futurisme (Milan: Editions de Poesia, 1909). This futurist manifesto also appeared in several Italian newspapers and in the Parisian Le Figaro. On the effects of this initial publication, see Berghaus, The Genesis of Futurism.

16. Moréas’s “Le symbolisme,” published in Le Figaro, both coined the term “symbolism” and called for the “assouplissement” of certain classical rules of verse: caesura, hiatus, alternation of rhythms, and so on. Because the article appeared ten days before Kahn’s “Réponse des symbolistes,” in L’événement (28 September 1886), Moréas was publicly recognized as the inventor of symbolism and vers libre. Kahn and many others argued at the time, and scholars have agreed, that Moréas’s poetry was not vers libre in the strict sense they advocated. See Bonner Mitchell, Les manifestes littéraires de la Belle Époque 1886–1914: Anthologie critique (Paris: Seghers, 1966).


18. Vers libéré refers to a “liberated” form of regular verse that came into its own in the latter half of the nineteenth-century, especially through the efforts of Baudelaire, Verlaine, Rimbaud, Mallarmé, and others; it makes free with the rules of rhyme and uses a variety of devices to destabilize the rhythmic structure of the line. But, for all its liberties, vers libéré maintains the principles of isosyllabism and the indispensability of rhyme.


32. Vitality affects are distinguished from the categorical affects of anger, grief, elation, embarrassment, and so on that constituted much of the nineteenth-century discussion of the physiology of emotion, including Charles Darwin’s *Expressions of Emotions in Man and Animals* (1871). Henry did not distinguish these consistently; nonetheless, the importance of the vitality affect principle in his thought was indispensable for the artists who applied his ideas.
33. Charles Henry to Felix Fénéon, 18 September 1885, in Bibliothèque de la Sorbonne.
40. On Marey’s investigations, see Brain, “Standards and Semiotics,” 249–284.
42. Brücke, *Die Physiologischen Grundlagen*.
57. Camille Mauclair, [Untitled], in *Enquête internationale*, ed. Marinetti, 64.
58. Mauclair, [Untitled], 66.
60. Mauclair, [Untitled], 65.
61. Mauclair, [Untitled], 65.
64. “Since our concern was speech, and speech impelled us / to purify the dialect of the tribe / And urge the mind to aftersight and foresight.” T.S. Eliot, “Little Gidding,” in *Four Quartets* (London: Faber and Faber, 1944).
66. This work was disparagingly described by fellow Rousselot student Marcel Jousse, who, in lectures at the École d’Anthropologie, alleged that Rousselot was alarmed by the agenda of de Souza and Spire. Rémy Guérinel, “De la phonétique vivante et expérimentale du professeur Jean-Pierre Rousselot (1846–1924) à l’anthropologie du geste et du rythme du professeur Marcel Jousse (1886–1961),” unpub. ms., 8–9.
68. See Canales. On discussions of rhythm in industrial life, see Robert M. Brain, “The Ontology


84. Marinetti, “ Geometrical and Mechanical Splendor,” 139.


87. Lewis, Blasting and Bombardiering, 33.


89. Walter Nevinson, Newark Evening News, as quoted in Caroline Tisdall and Angelo Bozzolla, Futurism (London: Thames and Hudson, 1977), 104.


92. Hugo Ball, “Die Reise nach Dresden,” in Der Künstler und die Zeitkrankheit: Ausgewählte
93. Hugo Ball, “Das erste dadaistische Manifest” (1916), in Der Künstler und die Zeitskrankheit, 40.
For performances of Ball’s phonetic poems, see UbuWeb Sound: Hugo Ball, http://www.ubu.com/sound/ball.html.