CHAPTER 1

Elementary Principles

Books on any subject reflect of necessity a limited range of vision, in which some parts and qualities stand out while others retreat or vanish altogether. The readers expect to find their familiar, personal ranges of vision—ranges that might be very different from that of the author.

The danger of facing such discrepancies is especially great in the field of rhythm, whatever this doubtful term conveys. Rooted deep in physiological grounds as a function of our bodies, rhythm permeates melody, form, and harmony; it becomes the driving and shaping force, indeed, the very breath of music, and reaches up into the loftiest realm of aesthetic experience where description is doomed to fail because no language provides the vocabulary for adequate wording. Disenchanted, the author is, alas, compelled—as more or less is every writer on art—to describe the technical traits, the dactyls and double dots, *proportiones* and metrical patterns, rather than the elusive, indescribable essence of rhythm.

This being as it is, the present author has no hope of giving satisfaction to every reader; and when he thinks of the discontent with which he himself has laid away the writings of other men on the subject, he fancies with horror the reaction of his own prospective readers.

A foretaste of what might be in store for the author appears when it comes to defining the scope of the vocable 'rhythm,' which, so far, has been used in at least "fifty different meanings." [1]

[1] A. W. de Groot, *Der Rhythmus,* in *Neophilologus,* Vol. XVII, 1932, p. 82.

WHAT IS RHYTHM? The answer, I am afraid, is, so far, just—a word: a word without a generally accepted meaning. Everybody believes himself entitled to usurp it for an arbitrary definition of his own.

The confusion is terrifying indeed.

Teachers take their pupils to task for not playing 'rhythmically.' Rhythm, they imply, is inexorable strictness of time values, and they enforce it by counting, clapping, stamping irritably: *one, two, three, and four.* But other musicians tell us just the contrary: their "rhythm" is the willful deviation from deadly strictness. While they call 'meter' a metronomic, mechanical norm, their 'rhythm' is the human touch of freedom that makes 'meter' non-mechanical, non-metronomical . . .[2]

But even the Greeks, who coined the word 'rhythm' in early antiquity, and the Romans who followed them, gave it not only inconsistent, but outright contradictory, meanings. *Rhythmós,* like so many terms, changed scope and connotations from age to age, from man to man, in Hellas as well as in Rome.

In view of this confusion, it would be in the best scholarly tradition to repeat here all the different meanings that authors have given to the word 'rhythm' in two and a half thousand years. But such a tedious rehashing would have no positive result except, at best, the doubtful merit of completeness as against the very definite disadvantage of uselessness, boredom, and waste of precious space.

Also, most of these definitions would be useless for the purpose of the present book. Juxtaposing and contrasting the notion of rhythm with meter, *Takt,* or similar concepts is inadmissible where all these concepts, in very different civilizations and ages, must be described under one general, all-comprehensive concept of which they are mere parts or facets.

That this concept must be called rhythm cannot be doubted. In every language, and in spite of technicalities, the equivalent of rhythm has a character more general than any other term. We can, and do, discuss the rhythm of a building, a statue, or a painting; but we cannot discuss their meter or *Takt.* The very etymology of the word 'rhythm' is general enough to give it a commanding position.

[2] Cf. Jaap Kunst, *Metre, rhythm, multi-part music,* Leiden, 1950.

The derivation of the Greek term *rhythmós* leads back to a verb for 'flowing'—*rheō, rhein,* an early relative of the German *Rhein* or Rhine and even of the English word 'river.' Thus Fowler could tersely state: "Rhythm is flow." [3] But evidently this flowing is not, and never was, a smooth, inert, continuous movement without articulation. It is, rather, a fluency due to some active, organizing principle, to ever renewed impulses whose very orderliness at once gives life and ease to the flow.

This organized fluency is reflected in the various Greek connotations of the word. They start from movement, gait, and dancing, and—via the intermediate connotation of a treatment of such motion in art—reach beyond to the almost opposite meaning of restraint and moderation.[4]

The two extremes—movement and moderation—are connected in a charming formulation by the Roman grammarian, Charisius (*ca.* 400 A.D.): *Rhythmus est metrum fluens, metrum rhythmus clausus,*[5] or "rhythm is flowing meter, and meter is bonded rhythm." Here, flux and dam are united in one definition.

This latter meaning is obviously at the bottom of the most recent discussion on rhythm in its proper sense. Werner Jaeger, the famous classics professor, has made it convincingly clear that, far from denoting motion as such, the oldest use of the word indicated on the contrary a pause, a steady limitation of movement.[6] Among his examples are a poetic monologue by Archilochos from the seventh century B.C., who urges himself to "understand the rhythm that holds mankind in its bonds" (fragment 67 a 18); and Aeschylos (525–456 B.C.), whose Prometheus complains: "I am bound here in this rhythm."

As a consequence, Dr. Jaeger does not believe in the allegedly figurative sense in which the word 'rhythm' has been used in the visual arts of space. With the notion 'bond,' it would naturally apply to all the arts, and its preferential use in music and poetry would only be a later shrinkage in scope.

[3] H. W. Fowler, *A dictionary of modern English usage,* Oxford University Press, London, 1926.

[4] Ernst Graf, *Rythmus und Metrum,* Marburg, 1891, pp. 1 ff.

[5] Charisius Flavius Sosipater, *Institutiones grammaticae,* § 289, printed in Lindemann, *Corpus grammaticorum latinorum veterum,* Leipzig, 1840.

[6] Werner Jaeger, *Paideia,* transl. by Gilbert Highet, New York, 1939, pp. 122–124.

In itself, to be sure, the word 'movement' would seem to restrict the concept of rhythm to the so-called arts of time, to music, poetry, drama, and dancing. But this time-honored classification is not unchallenged today.[7] We no longer believe in a rigid separation of time and space in the arts. Movement, at least in a psychological sense, is never quite absent from the visual arts. Giving shape to things and thoughts with pencil, burin, or brush, the hand is in restless motion; up it goes and down and left and right. And since in a way most art perception retraces the creative process, the observer perceives the lines of the artist as live and moving forces: to him, they rise and fall, converge, diverge, intersect, and draw the viewer's eyes to the fore and the back. No work of art can simply *be;* it always stirs and acts and forces the spectator to follow with his senses the many directions that it suggests.

Factual coexistence in space does not necessarily mean coexistence in our vision or, for that matter, in our aesthetic experience. It often dissolves into a sequence of perceptions, both physiologically and aesthetically.

"The normal eye," in the first place, "does not try to see a large area at a time, never a whole line, for instance. . . ." [8]

In the second place, quite a number of visual works demand aesthetically a moving eye to read them section by section over a period of time. We will not even speak of the landscaping art, whose very reason of being is the moving visitor to behold its ever changing scenery. But we might speak of the allegedly static art of architecture. "Are there instantaneous monuments? Are there monuments in which we perceive in a flash, and not by slowly followed routes, the various elevations, the outer and the inner views, the perspectives, the successive vistas?" [9] When the Gothic cathedral emerges unexpectedly from the tangle of lowly, narrow-set buildings, it takes a couple of seconds before the eyes, obeying the surge of the tower, have reached the tip of the steeple. Many

[7] Cf. also Marcelle Wahl, *Le mouvement dans la peinture*, Paris, 1936, Etienne Souriau, *La correspondance des arts*, Paris, 1947, p. 77; Gisèle Brelet, *Le temps musical*, Paris, 1949, pp. 3 ff.

[8] Harold M. Peppard, *Sight without glasses*, New York, Garden City Publishing Company.

[9] Étienne Souriau, La correspondance des arts, Paris, 1947, p. 77.

sculptures must be 'developed' by walking around and examining them from every angle—so much so that recently Michelangelo's statues were made a subject for 'movies' in the proper sense of the word. And in medieval paintings, on glass, or wood, or stone, the phases of the Passion are often set in a single common scenery and require a moving eye to read the episodes from the Last Supper via the Crucifixion to Christ's Entombment and Resurrection. Indeed, the earliest rhythmologist proper, Aristotle's pupil Aristoxenos of Tarentum, who wrote around 330 B.C., attributed rhythm to an art as visual and spatial as sculpture.[10]

This book deals little with rhythm to be seen or to be felt. It is concerned rather with the steady, orderly recurrence of audible impressions only, that is, with rhythmical sounds. And it is concerned with rhythmical sounds exclusively as an element of art, as an aesthetic experience.

In keeping with the 'bonding' element in the Grecian concept of rhythm, Aristoxenos called rhythm the *taxis chronon*, the 'order of times.'

But there had already been a better, broader definition: one generation before Aristoxenos, Plato had explained that rhythm was a *kinéseos taxis*, an 'order of movement.' [11] It would be safer, however, to add what Andreas Heusler added to the Aristoxenian definition: *Gliederung der Zeit in sinnlich fassbare Teile*, or "organization of time in parts accessible to the senses." [12] For art cannot live but in the realm of perception.

Plato's kinetic definition excludes implicitly two forms of movement as non-rhythmical:

kinetic chaos, such as an avalanche produces while thundering from landing to landing; and

kinetic continuum, like that of a smoothly gliding sailboat, car, or plane.

[10] An experimental research into visual rhythm is: Jean Weidensall, *Studies in rhythm*, Chicago, n.d. Cf. also: Willy Drost, *Die Lehre vom Rhythmus in der heutigen Aesthetik der bildenden Künste*, Dissertation Leipzig, Leipzig, 1919.

[11] Plato, *The Laws*, II, 665.

[12] Andreas Heusler, *Deutsche Versgeschichte*, Vol. I, Berlin, 1925 (in *Grundriss der germanischen Philologie*, Vol. 8, i), p. 17.

It includes, on the contrary, kinetic intermittence at regular intervals, which, perceived through ears or eyes or feeling, makes our minds aware of a well-organized expanse in time or space. Such intermittence amounts to a steady, orderly recurrence of visible, audible, palpable stimuli; as, in the tactile field, of strong and weak; and in the visual field, of light and dark, or up and down, or left and right.

Recurrence appears in its lowest form as an undifferentiated pulsation like the throbs of the heart, the even tick of a clock, the regular flash of a blinker, or the nerve-racking drip from a leaking faucet.

Some authors have been unwilling to accept such simple pulsation as rhythm.[13] Still, recurrence of this kind complies with the basic requirement: to be kinetic, intermittent, and perceived through one of the senses. Indeed, their intermittence is of the strongest kind. They do not alternate between a more and a less, but between yes and no; not between stronger and weaker, or lighter and darker, but between a push and a pause, or presence and absence.

RHYTHM AND FORM. It has become a truism that the notion of rhythm has been expanded to encompass the whole 'form' or structure of a piece. The basic idea of such expansion is this: In dealing with rhythm, we find a generating, time-organizing pattern in two phases, say long and short, or strong and weak, or heavy and light, or dark and clear, or whatever the contrast may be. If, as usually, this pattern is repeated, the two phases recur on a higher level: the first pattern may play the role of the strong phase, while the repetition may be the weak phase, or vice versa. The easiest example is our 2/4 bar with the generating pattern *one*–two. Repeated, it forms a greater pattern of 4/4, in which the one–two group is stronger than the three–four group. And so on in double bars, phrases of four, and periods of eight or sixteen measures—a process that can theoretically be continued ad infinitum. Hence the old idea that rhythm and 'form' are more or less two names for the same thing.

[13] François-Auguste Gevaert, *Histoire et théorie de la musique de l'antiquité*, 1875–1881, Vol. II, p. 14; Eduard Sievers, *Metrische Studien*, I, in *Abh. d. k. sächs. Ges. d. Wissensch.*, Vol. 48, 1901(03), p. 28. For the opposition: Rudolf Westphal, *Elemente der musikalischen Rhythmik*, Jena, 1872, p. 3.

Alas, not many composers have been acquiescent enough to comply with what the textbook writers demand. The square formation—2^x—is frequent, to be sure. But it is neither general nor, as a rule, consistent. And when we leave its rather restricted realm, the equation of rhythm and form becomes unwieldy and dangerous. Indeed, it would be purest nonsense in the analysis of any symphonic poem by Strauss or Debussy or, for that matter, an organum of the earlier Middle Ages. Even in so well-wrought a form as that of a Bach fugue we would be at a loss to find the prevailing rhythm or form prefigured in the rhythmic cell of the theme. Does the second, C minor, fugue of the *Well-tempered Clavier* reproduce as a whole the tiny anapaest of the theme?

Ex. 1. Bach, *Well-tempered Clavier*, Fugue I, 2

Let us not quarrel over the trifles of words. Everybody is entitled to call the ABA of a da capo aria a rhythmic structure or, if he so chooses, even the four movements of a symphony. They represent indeed what Plato called a rhythm: *kinéseos taxis*, an 'order of movement.' At a pinch, they might represent even Heusler's "organization of time in parts accessible to the senses," if the structure is unusually clear-cut. But the accessibility to the senses is open to doubt. For any longer piece is very definitely at variance with the findings of modern psychology that "the maximum filled duration of which we can be both distinctly and immediately aware" is twelve seconds, which is the reason why the ancient Greeks limited the length of a verse to twenty-five time units.

While we concede—and gladly—that any structure has rhythmical qualities, we must not expand a rhythmical microcosm into a rhythmical macrocosm. Rhythm weakens the more we widen its concept and scope—not only because the perception of rhythm must needs deteriorate with its expansion, but also because the basic requirement of rhythm—regularly recurrent accents, lengths, or numbers—is no longer fulfilled in the larger forms. The four

movements of a symphony have accents only in a figurative sense, and their arbitrary, not recurrent, lengths can no longer be said to conform to a rhythmical pattern.

The concept of form, on the other hand, includes a number of non-rhythmical qualities that may be just as strong as rhythm, if not stronger. In the first place, there is pure melody. The form of a rondo depends upon the recurrence, after separating episodes, of a certain leading melody, in which the exact correspondence in the sequence of notes seems more important than their rhythm. In the second place, there is pure harmony. The title "Symphony in C major" implies the outstanding, structural role of C major—as a starting point, an ever-recurring feature, and an end and goal. Of late, our analysts have found tonality to be the structural principle even of operas, particularly Mozart's and Wagner's, with the C major of the *Meistersinger* as the best-known example. And the basic formal principle of a fugue by Bach is its plan of modulation from key to key.

Thus—at least in the eighteenth and nineteenth centuries—harmony as much as rhythm could be said to be 'form.'

Rhythm, like melody or harmony, must not be said to be form. But it can contribute to form as one of several elements, which all concur in creating musical structure. It might even be one of its facets. But we will not dilute the topic of this book by allowing rhythm, the 'bond' of flow, to peter out and lose itself in the infinite.

THE AESTHETIC EXPERIENCE derived from regular intermittence can be twofold, active and passive.

Active experience is directly connected with the work and will of man: all repetition of a motor act at regular, easily perceivable intervals simplifies the work of the limbs. It automatizes the impetus necessary to drive them on and consequently saves considerable energy of motion and volition. The resulting relief implies that pleasurable sensation that we find at the bottom of all aesthetic experience.

The passive aesthetic value of regular intermittence derives from empathy; this word, according to the *Oxford Pocket Dictionary*, denotes "the power of projecting one's personality into (and so fully comprehending) the object of contemplation." The pleasurable sensation passes from the doer to the beholder. It conveys not only the satisfaction of ease and control, but also the gratification that mankind draws from order.

The details belong in the domains of aesthetics and psychology, which lie outside the scope of this book. The interested reader can find a masterly "inventory of the sources of pleasure in rhythm" on half a dozen pages of Carl E. Seashore's *Psychology of Music.*[14]

History, however, shows that aesthetic satisfaction has no absolute, unconditioned character. It is subject to factors that change from man to man, from age to age, from country to country. Rhythm is a 'bond'—a discipline imposed on music and poetry in order to convert unshaped raw material into a well-wrought art. And therefore the satisfaction that it gives depends upon the degree to which the interference of form with formless nature is desired or at least tolerated.

Thus the aesthetic appreciation and the fate of rhythm must needs agree with the appreciation and the fate of form in all the history of art and with its foremost rule: the more a style leans to the classicistic side, the more does it stress form at the cost of naturalness and of the striking power of nature's haps and passing moments. The less a style is classicistic, the more does it stress the here and now of reality at the cost of form. Classicistic styles, both in poetry and in music, will readily sacrifice a good deal of natural speech inflection to the beauty, flow, and cadence of meters. And in instrumental music, they will sacrifice many impulses that might conflict on the spur of the creative moment to the smoothly running evenness of recurring lengths and accents. Non-classicistic styles, on the contrary, would readily sacrifice the even flow and cadence of regular meters to natural speech inflection and conflicting impulses on the spur of the creative moment.

Examples are not hard to find: the steadily growing victory of speech inflections over the formality of even, recurrent meters in Greco-Roman antiquity; the decay of Gregorian meters in the naturalistic times of the Romanesque; the 'oratorical' style with emphatic offbeats or *senza misura* in the naturalistic Early Baroque; the prose texts of operas—*Louise, Pelléas, Salome*—in the naturalistic age around 1900; and the ever-changing, not recurrent

[14] Carl E. Seashore, *Psychology of music*, New York, 1938, pp. 140–145.

time signatures in the primitive world as well as in the primitivistic world of Stravinsky and Bartók.

Counter-examples on the classical side are: the strict regulations in the so-called classical times of ancient Greece; the imposition of rhythmic modes on the polyphony of the earlier and middle Gothic Age; the rigid accents in the High Renaissance of Italy; the even beats of Luther's chorales in the time of Bach; or the strictness and consistency of Mozart's rhythms.

FREEDOM AND STRICTNESS. Order is the vast expanse between the deadly extremes of chaos and mechanization. There are numberless shades within this expanse, some of which draw closer to one of the poles, and some to the other: freedom is often not far from chaos; punctilious, frigid strictness stands next to mechanization. The present author does not share in the view of the Swiss philosopher, Ludwig Klages, that the two sides (he calls them, not quite successfully, *Rhythmus* and *Takt*) are different in essence.[15] Shades of the same phenomenon, they stretch between the extremes of chaos and metronomic lifelessness; and whatever we call music is nearer to one or to the other extreme, in a gradation similar to that in human locomotion between a leisurely stroll and stiff-legged goose-stepping, with a light-footed, effortless walking pace somewhere in the middle.

Rhythmical freedom must therefore not be looked upon as lawbreaking with a judge's contemptuous eye. It is neither inferior nor rudimentary, but just dissimilar. Far from being chaotic or defective, the rhapsodic strains of a shepherd lonely on the hills can have the wild, exciting beauty of horses, unbridled and panting, that gallop across the savanna. And again they have the soothing, tender, often melancholy charm of a streamlet rippling forth in dreamy monotone. Indeed, they might not even suggest that much motion; wide-spun and often with long fermatas and rests, they seem to defy the lapse of time and to hover motionless in the air. Nor could you or would you lift your baton to the song of a lark, although you sense its perfect, lawful orderliness, irrational as it may be. Indeed, you feel that any 'normalcy' of song and motion would kill their charm in an unnatural mechanization.

[15] Ludwig Klages, *Vom Wesen des Rhythmus,* Kampen, 1934.

A good number of sophisticated composers in the nineteenth and twentieth centuries, tired of deadly, inhuman normalization, have tried again and again to retrieve this pristine charm of nature.

The passage from freedom to strictness is smooth; no sharp-drawn border keeps them apart. Mechanical rhythm cannot last for any important length of time, either in music or in poetry. The strictest orchestral performance in western concert halls under the pitiless beat of the baton accepts those often imperceptible shades of driving or checking for which Hugo Riemann invented the pseudo-Greek word *Agogik;* and whoever tries to adjust his mind and fingers to an evenly ticking metronome feels strongly handicapped, even in the soulless execution of etudes, to say nothing of romantic, emotional music. To repeat a striking expression of Ralph Kirkpatrick's, one falls "below the human level." [16]

Free rhythm, a precious heirloom from our animal ancestry, is doubtless the earlier quality. Strictness comes with man.

CLASSIFICATION. Rhythm appears under many very different forms. The word, in the sense of our definition, evokes the even beats in most of our present western music and the almost chaotic arbitrariness in jazz and modern art music; it applies to the regular squareness of East Asiatic melodies; to the weird, irregular patterns of the Near East, of India, and of Negroes all over Africa; to the tidy feet and meters of ancient Greece; to the rigid Gothic *modi* and *ordines* of the Middle Ages; to the complicated polyrhythms of the Flamboyant; to the almost stressless flow of Renaissance polyphony; and to a great many other forms of organization.

In the field of rhythm, approaches and solutions change from country to country, from culture to culture. But they also change from age to age within the same civilization; and we have no lesser difficulties in understanding and performing the almost unaccented polyphony of Palestrina's age within the traditions of our own historical area than in perceiving and comprehending the 7/16 time of a Bulgarian folk song or the breath-taking drumbeat combinations of African Negroes.

It is mainly for this reason that the historian finds but little help

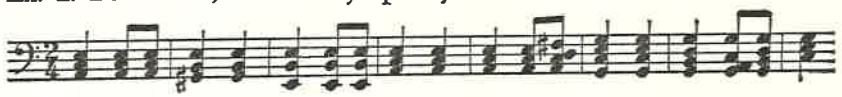
[16] In J. S. Bach, *The "Goldberg" Variations,* ed. Ralph Kirkpatrick, New York, 1938, p. xxiv.

in the diligent studies of experimental psychologists who have been interested in rhythm ever since Ernst Meumann's pioneering approach of 1894.[17] The human guinea pigs of our psychological laboratories, even if carefully shuffled, belong in our time and in our own civilization and yield useful material only for this very limited section of the whole expanse in time and space in which the historian is interested. The history of rhythm teaches, on the contrary, that different generations and different cultures react very differently. When the German psychologist Dietze, for instance, finds that even numbers of beats or stimuli are more easily grasped than odd ones, his statement is valid for hardly fifty per cent of mankind: the whole east of Europe, the north of Africa, the southwestern quarter of Asia, India, and other regions give preference to odd-numbered rhythms and seem to grasp them quite readily.

It is not easy to stake out the diverse forms of rhythm. In all their divergence, they overlap enough to make the classifier's life uncomfortable. Yet we cannot shun the task. A mere description of rhythmical concepts and devices as we find them here and there in the world would be useless and impossible. For only a sound classification can show us what to describe.

The following paragraphs outline the main approaches of mankind to the problem of musical rhythm, albeit tentatively. But the discussion will be brief and will leave details to the chapters in which they find their natural places.

Ex. 2. Beethoven, Seventh Symphony, slow movement



Ex. 3. Schubert, D minor Quartet, slow movement

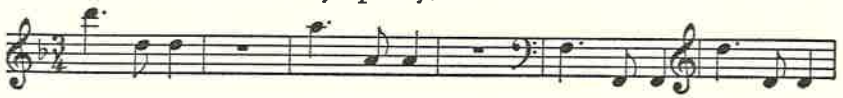
[17] Ernst Meumann, *Untersuchungen zur Psychologie und Aesthetik des Rhythmus*, in *Philosophische Studien*, Vol. X, 1894. Cf., for example, Kate Havner, *The affective value of pitch and tempo in music*, in *American Journal of Psychology*, Vol. 49, 1937, pp. 621–630.

In either one of the slow movements of Beethoven's Seventh Symphony and of Schubert's quartet *Death and the Maiden* we face actually two very different, indeed opposed, kinds of rhythm: in the first place, we can describe the two pieces as moving in 2/4 time, with a stronger accent on every odd-numbered quarter; in the second place, we can describe them as moving in a dactylic or adonic pattern (dactylic being long–short–short, and adonic, long–short–short–long–long).

The first statement means that within a (practically unlimited) pulsation of motor units or quarter notes, an ever so light accent stresses the odd-numbered units. This recurrent accent couples every two quarter notes to form a structural group—*one*–two *one*–two, and so forth. The second statement means that the piece appears as a sum of recurrent configurations, each of which comprises one long and two shorts (♩ ♫).

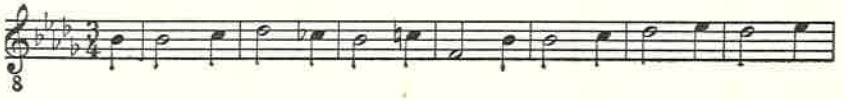
In a similar way, the scherzo in Beethoven's Ninth proceeds in 3/4 time in dotted, so-called cyclic dactyls (♩. ♪ ♩); Bach's Brandenburg Concerto No. 3 moves in ¢ and anapaests (♬); and the second section in Brahms' German Requiem—*Denn alles Fleisch ist wie das Gras*—in 3/4 and iambs.

Ex. 4. Beethoven, Ninth Symphony, first movement



Ex. 5. Bach, *Brandenburg Concerto*, No. 3

Ex. 6. Brahms, *Deutsches Requiem*, second movement



The two statements are obviously not just two different ways of describing the same quality; the dactyls may appear under two different time signatures, 2/4 and 3/4; and the signature 3/4 goes

with both dactyls and iambs. Rather, the two descriptions mark two different regulating principles.

The first of these principles, closest to westerners, is easily understood as a progress in even steps: again and again western musicians have measured their time and tempo by normal, leisurely strides. And they have used the stride, not as a simile, but to cover an actual unit of motion. A series of beats at equal distances is organized in patterns of two beats through evenly recurring accents: *one*–two *one*–two (2/4).

This 'striding' form of rhythm may be called 'divisive.' A stride, in the words of Webster's *International*, is "an act of locomotion . . . completed when the . . . feet regain the initial relative positions." The stride is hence a concept that exists before we divide it into two components or phases of equal length, the step of the left foot and the step of the right. In a similar way, its musical counterpart, the 2/4, exists as a basic pattern before we divide it into one accented and one less accented step or beat, as we usually call it for the conductor's motion. The 2/4 exists as a basic, ruling pattern before the details of melody take shape in the head of the composer. In the simplest cases, in marches, hymns, nursery songs, etc., the actual melody coincides with the beats. In more complex pieces, the melody proceeds without too much regard for the stepping frame. Theoretically, the first beat of a group or bar is meant to carry the strongest accent or weight. Indeed, the conductor's baton moves energetically down. What the ear perceives is often very different and contradictory: all accents, indeed all notes, may fall between the beats; and, ignoring the conductor's gesture, the composer might place a rest or else let die the fading remainder of a previous note tied over the bar line where properly the strongest beat should be. Actually, the rest is in this case not a repose, not a cessation of activity, but rather what the late-Latin, French, and Italian terms for quarter rests suggest: a *suspirium*, *soupir*, or *sospiro*, that is, a 'sigh' or a 'breath,' indeed, an active function of our body.

Whether or not the regulating beat in divisive rhythm is perceptible or else contradicted by a freer span of the melodic line, it exists as an all-present function of the organizing forces in our bodies and minds. It reflects and expresses the regular alternation

in which we arrange our movements, be it the actual tension and relaxation of muscles or a steady reciprocity of the right and the left foot in striding. Consciously or subconsciously, we relate the music to this physiological rhythm and overlook its vagaries, or else we enjoy them as such for giving us the aesthetic delight in order with freedom.

Along with divisive rhythm, the examples given above—iambs, dactyls, and anapaests—show a different concept of rhythm. The regular recurrence on which such patterns rest is not a certain duration to be divided into equal parts, but rather a grouping (in poetry: foot) composed of longer and shorter elements (in poetry: syllables), such as 2 + 1, or 3 + 3 + 2 units, or any other arrangement of shorts and longs. These rhythms are 'additive.' As a consequence, disturbing offbeats, ties, and rests in accented places are inadmissible in principle. They would destroy the identity of an additive pattern.

Divisive rhythm shows how the parts are meant to be disposed. It is regulative. Additive rhythm shows how the parts are actually disposed. It is configurative.

Another consequence is that these aggregates of dissimilar elements cannot be called 'striding.' Their physiological equivalent is rather the tension and relaxation that we experience in breathing in and out—a motion to and fro which is under normal conditions regular but hardly equal.

The simile of respiration forced itself upon writers on rhythm as early as the nineteenth century. Alas, pent up in the music of their time or, worse, in the music of "our classical masters" Bach and Handel, Mozart and Beethoven, and smilingly nescient of anything else, they misused, like Mathis Lussy in Paris, respiration for a divisive, binary rhythm which did not need or even stand this simile. A more important statement has to hide in a footnote of Lussy's: that "when we hear a person breathe in a quiet sleep, the time between expiration and inhalation is twice as long as that between inhalation and expiration. Consequently [says Lussy] a person in a state of quiet breathes in ternary time." [18] The audacious dictum that respiration is by nature just ternary seems

[18] Mathis Lussy, *Die Correlation zwischen Takt und Rhythmus*, in *Vierteljahrsschrift für Musikwissenschaft*, Vol. I, 1885, p. 144.

to be doubtful even if we do not secure the testimony of a physiologist. I am afraid that Lussy yielded to the lure of tampering somewhat with the irrational durations of nature, since the only uneven time he knew was ternary. But the essential facts in his argument are these: (1) binary rhythm is *not* breathing, as Lussy had stated before; and (2) respiration belongs to ternary rhythm.

The latter point demands clarification. The words "in principle" and "purest form" in the preceding paragraphs were necessary to avoid confusion. The very examples from European music at the head of this section, from Bach and Beethoven, Schubert and Brahms, show that the two elementary concepts of rhythm can unite and have united, in the East and the West, in the past and the present. The spondee, the dactyl, and the anapaest of the Greeks may be meant to be 'additive,' but since they can be divided by two, they are also divisive. And our, and Lussy's, 3/4, although divisible by three, is even in modern western music as a rule iambic or trochaic, that is, 'additive' in the sense of 1 + 2 or of 2 + 1.

Rhythmology—especially in the field of poetic versification—has coined a pair of terms to cover the two forms of rhythms just discussed: it calls 'qualitative' the rhythms based on equidistant accents, and 'quantitative' the rhythms based on impulses at different distances. 'Qualitative' refers to intensity—to strong or weak, accented or stressless; 'quantitative' refers to duration—to long or short.

The present author hesitates to use these terms. For even educated musicians and experienced philologists pause a moment to make sure which is which. The two words are too similar in sound to express the contrast graphically and too vague to denote duration and accent as unmistakably as they should. Thus, the present author finds in his faithful *Petit Larousse* that in French the verses following *la quantité* of syllables are called *métriques*, but the verses following *le nombre* of syllables are called *rythmiques*. Alas, when you care to look up *quantité* in the same dictionary, you will find it to be a *nombre*. Incidentally, is not, in logical language, 'quantity' very definitely one of the 'qualities' of a rhythm? Since

Le petit Larousse is on the desk, let us see . . . and indeed: *quantité* is a *qualité* of that which can be numbered. . . .

Instead of the later term 'quantitative,' the Greeks invented, and most scholars have kept, the word *metron* (in Latin *metrum*), derived from the verb *metreo* (in Latin *metiri*) 'to measure.' In full agreement with this term, the later Middle Ages called 'mensural' a notation especially devised to show the relative lengths of its notes, its longs and its breves; and to this day, the terminology of the French, leaders in versification, has retained the names of *vers mesurés* and *vers métriques* for poetry in long–short patterns. Hence meter has the backing of a tradition strong and good enough to justify its use for rhythm by length, and nothing but rhythm by length.

What, however, should rhythmic organization by stress be called? Here, too, the coexistence of conflicting definitions runs one into serious difficulties. Even the ancient Greeks and Romans, who laid the foundations for every discussion on rhythm, have left a rather confusing picture. Most of them do what we can and will not do: they juxtapose 'meter' and 'rhythm,' as does for instance Aristides Quintilianus around 100 A.D.: "Meter is only in words, but rhythm is in the motion of bodies" (*metrum in verbis modo, rhythmus in corporis motu est*). Saint Augustine, the Carthaginian Church father (A.D. 354–430), has been quoted as opposing this terminology when he rightly says that "every meter is rhythm, but not every rhythm is meter" (*omne metrum rhythmus, non omnis rhythmus etiam metrum est*). What he, as a representative of late antiquity, actually means is something very different: 'meter' has at least two verse feet and not more than four; 'rhythm' is an aggregate of several meters. However, he adds, musicians call all feet and meters 'rhythms.'[19] This amounts more or less to what Servius (late fourth century A.D.) tersely states in *De accentis:* Metricists accommodate duration to their syllables; rhythmicists accommodate their syllables to time.[20]

The Greek distinction between 'rhythm' and 'meter' does not

[19] Aurelius Augustinus, *Musik*, transl. C. J. Perl, Strassburg, 1937, p. 89.
[20] Quoted from Rudolph Westphal, *Fragmente und Lehrsätze der griechischen Rhythmiker*, Leipzig, 1888/89, p. 43.

help us, since it opposes a musical to a poetical concept. On the contrary, what we need is a couple of terms for different aspects of the one musical concept of rhythm.

The present author thinks that the best antonym of 'metrical' would be 'accentual.' This word is by no means his invention; it has been used here and there, and notably in the timeless controversy on the rhythm of Gregorian chant; but it is buried under heaps of inadequate terms. Unfortunately, this word is not quite adequate either. Actually, we accent very little unless there is a *sforzato* mark on a note; and a considerable part of our allegedly accentual literature is played on the organ, and another part was in earlier centuries performed on the harpsichord, where accents are outright impossible. Metrical music, on the other hand, including the most metrical melodies from India and Greece, can seldom do without accents, even where stresses are not compulsory. The term 'accentual' is, however, acceptable as long as we keep in mind the basic fact that, as pointed out before, accent, albeit regulative, is not necessarily perceptible, provided that we ourselves project into music our awareness of an accentual pattern.

It should be made clear from the very beginning that a strict separation and opposition of meter and accent contradicts the facts. With a few exceptions—such as the so-called Scotch snap and the prosody of the French language—there has always been a natural trend toward the lengthening of accents and, on the other hand, toward bestowing an accent on lengths.

To sum up: pure accent and pure meter are mere extremes, not opposite classes. They meet and merge in ever new combinations.

From an orthodox viewpoint, accentual rhythm ought to be binary: two beats, not three, are connected and comparable with our even strides to the left and the right. Ternary patterns like 3/8, 3/4, and 3/2 stand halfway in the metrical camp. Not being divisible by two, they necessarily consist of two unequal parts in the ratio of 2:1; they are two *plus* one (trochaic) or one *plus* two (iambic) just as much as they are three times one.

Meters, on the other hand, are not estranged from bodily motion either. In the Orient, they are inseparable from accentual hand-clapping and drumbeats; and in ancient Greece, they were members of the complex art of 'orchestics,' in which words, music, dancing, marching, and gesture combined the expressions of the mind and the body.

In their common relation to the stride of man, the two approaches to rhythm overlap. 'Meters' of two equal members such as in Greece the pyrrhic ♫, the proceleusmatic ♫ ♫, the spondee ♩ ♩, and the dispondee ♩ ♩ ♩ ♩, are divisive and multiplicative rhythms in need of an accent to keep their identity.

While the contrast of metric and accentual patterns is striking enough for ready distinction, there exists an important and somewhat embarrassing third group of verses and melodies in which no metric organization and hardly any recurrence of accents are considered.

Philologists have tried to comprehend this group as a third, independent class along with the metric and the accentual group. They have taken the number of syllables in a verse as the distinguishing trait—eleven for the Italian *endecasillabo*, twelve for the French *alexandrin*—and called the verses 'counted' or 'isosyllabic.' The latter term can hardly be commended. In the first place, 'syllabic' cannot be extended to textless musical rhythms; in the second place, it might suggest an invariable number of units in each of the lines as well as a uniform length for each of the syllables.

Andreas Heusler [21] has denied this group an existence in its own right. Its main characteristics, as he sees them, are: a sequence of syllables in principle equally long; a (suggested) alternation of up and down, with one down between two ups (as iamb and trochee), or with two downs between two ups (as anapaest and dactyl): actual accents infrequent. He says: "Usually, like the Romance verse, the last up before a caesura and the end of a line must bear a syllable accented in speech. Otherwise the verse does not need any coincidence of up and natural accent."

Seen from this angle, the alleged third group would be nothing but a shade of accentual verses, in which the voice is allowed to ignore a number of suggested accents in the interest of one or two essential stresses in a line. This, however, is hardly an exclusive feature. It has been done in a goodly number of verses that we would unhesitatingly call accentual. Every well-built verse runs

[21] Andreas Heusler, *Deutsche Versgeschichte*, Vol. I, Berlin, 1925, p. 85.

to a single peak; and we do not know how often the performers might have bestowed this one-peak on quite respectable verses in order to avoid mechanization and enhance a speechlike flow.

On the other hand, it must be conceded—against Andreas Heusler's authority—that a feel of rhythm can doubtless be conveyed by an even or alternate recurrence of numbers, if they do not exceed the limit of easy perception.

The *Rigveda*, most sacred book of India, and the *Avesta*, the holy book of ancient Iran, are uniformly composed of sixteen syllables in two equal half-verses, without any meter or accent. A similar organization is common in Chinese, Korean, and Japanese verses; it recurs in Byzantine chant, in Middle English, French, Spanish, Portuguese, and Italian poetry. The original Alexandrine verse of France was established in the twelfth century as a non-metrical and non-accentual set of twelve syllables in two sections of six syllables each, after the manner of the Avestan verse.

But the best example of numerical rhythm is the national verse of Italy, the *endecasillabo* or line of eleven syllables. During the seven hundred years of its existence—from Guittone d'Arezzo and Dante to G. Carducci and d'Annunzio—it never leaned towards meter; all syllables have in principle identical length, although the Italian likes to dwell on accented syllables even in ordinary speech. The organization is purely accentual, but in various arrangements. Theory distinguishes between an *a maiore* and an *a minore* form: *a maiore* denotes the form 6 + 5 syllables, *a minore*, on the other hand, 4 + 7 syllables. There is always an accent before the caesura, and another on the next to the last syllable. The classical *a maiore* verse is the first line of Dante's *Divina Commedia:*

Nel mezzo del cammin di nostra vita
. . . . . ! . . . !.

The *a minore* verse has an additional accent in between:

Per me si va nella città dolente
. . . ! . . . ! . ! .

or:

Per me si va nell' eterno dolore
. . . ! . . ! . . !.

(The *endecasillabo* recurs in Spain as the *endecasílabo;* its *a maiore* form is *común*, and its *a minore* form, *sáfico.*)

Within the *endecasillabo*, the accents have changed in number, place, and intensity; but the eleven syllables have not changed. This number, then, is the essential quality of the verse.[22]

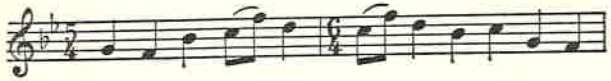
It is, however, outside the scope of a musical book to establish verse classifications. Whether or not this kind of rhythm is a subdivision of accentual poetry should be left to the decision of philologists. The phenomenon as such cannot be ignored, be it coordinated or subordinated. And since a phenomenon must have a name in order to be discussed, we choose 'numerical.' Too bad that the only adequate name, 'quantitative,' has been misused for other purposes.

Numerical rhythm, with its three qualities,

(1) a counted number of syllables,
(2) absence of meter,
(3) absence, scarcity, or vagueness of accents,

accounts for an impressive number of musical structures at variance with those which we take for granted. This applies essentially to the most characteristic music of eastern Europe, especially Russia.

Ex. 7. Mussorgsky, *Pictures at an Exhibition, Promenade*



When we try to analyze the *Promenade* from Mussorgsky's *Pictures at an Exhibition* (1874), we realize the failure of our wonted criteria. The composer gives to the first measure 5/4, and to the second one, 6/4. But these signatures are arbitrary and illogical. There is definitely no special accent (as there should be) on the first beat of the second bar. Rather, there are *sforzato* marks on each one of the notes. On parsing the phrase, we might find a suggestion of alternately up and down, five complete and one catalectic iamb, while the opposite sequence is musically impos-

[22] Cf. also Emilia Fiorentino, *I ritmi della poesia italiana sono quelli della musica,* in *Rivista musicale Italiana,* Vol. 23, 1916, pp. 73–114.

sible. But an actual alternation of strong and weak would be against the consistent *sforzato* marks as well as against all musical logic. The only admissible description is: a phrase of eleven quarter beats with a suggested but not realized stress pattern.

There are hundreds of similar examples; Mussorgsky's and Stravinsky's scores are full of them, and a few will be quoted in the last two chapters of this book.

Here, it will suffice to say that, while numerical rhythm is poetically a nuance of accentual organization, it is musically a shade of additive patterns.

TEMPO. The natural stride of man, important in matters of rhythm, is inevitable in matters of tempo.

Men of today are generally unaware of the fact that there was, is, and must be, an average normal time—*tempo giusto*, as the time of Handel called it. Without the concept of normalcy we would not be able to rate a tempo as fast or as slow. Again and again, each chapter of this book will have to record a standard tempo recognized as 'normal'; and again and again, each chapter of this book will have to mention that the regular stride of a man walking leisurely has provided the physiological basis. This implies a rather consistent time unit or 'beat' of 76–80 M.M., which means 76–80 pendulum ticks a minute on Johann Nepomuk Mälzl's commonly used metronome.

It is obvious that we call fast all tempi expressed in higher metronome numbers, and slow, all tempi expressed in lower metronome numbers. Still, things are not that simple.

The complication and confusion in modern times derive from our elaborate gamut of tempo shades *prestissimo, presto, un poco presto*, and so on all the way down to *molto adagio*. Such a variety of tempi implies a ratio of about 1:8 between its extremes: the fastest tempo is meant to be eight times quicker than the slowest tempo.

Such a range does not, and actually cannot, exist. For it conflicts with physiological conditions of tempo, with the range accessible to marchers' steps, to dancers' *pas*, to conductors' beats. No human being is able to stretch or to shorten steps and beats within so enormous a span. Dancers, marchers, conductors would automatically take a number of all too rapid units on one of their steps or beats or else divide an all too sluggish unit into a number of steps or beats in order to re-establish a physiologically acceptable meaning and basis. In other words, the conductor would in a medium tempo beat quarters, in a faster tempo halves or wholes, and in a slower tempo eighths. Therewith he would reduce an alleged difference in tempo to an actual difference in symbols. We know this change of symbols without a change of tempo best from the practice current around 1500: quite a number of pieces of that time are written with a certain time unit in one manuscript, and with a different time unit in some other source without the slightest implication of different tempi.

An actual change of tempo, a true acceleration or retardation, is possible only in much narrower limits. The maximum of slowness, which still allows for a steady step or beat, is possibly M.M. 32, but probably a higher metronome figure; and the maximum of speed, beyond which the conductor would fidget rather than beat, is probably M.M. 132. These two extremes are not at a ratio of 1:8, but at best only of 1:4, and probably less.

Incidentally: the present author has tried to metronomize Bach's B minor Mass, each movement separately and on various days, and found that his beat was consistently near M.M. 80, covering now a quarter note, now an eighth, now even a half note, including the "fast" triple-time pieces like the *Gloria*, in which two of the three eighths follow one of these beats (which would amount to ♩. = M.M. 53).

And, once more, incidentally: The belief that from the oriental layers of history down to the eighteenth century in Europe the throbbing heart has provided a physiological basis of musical tempo is widely open to criticism. The present author, for example, has a pulse somewhere in the sixties, and sometimes even below sixty; but his usual, 'personal' standard tempo in performing or reading music is approximately 80 M.M. And a similar lack of agreement between the alleged physiological standard and cause and the actual personal tempo could be observed in the tempi of nearly all of the tested musicians. This irrefutable fact belies the musical influence of heart pulsation. Is it not rather the other way round: that in determining musical tempo, civilizations

without a mechanical metronome have always availed themselves of the ticking clock that nature has given to the heart? The pulse can certainly measure music. But just as certainly it does not rule it.

It seems, therefore, that the word 'tempo' covers two very different concepts. One, the real, physiological tempo, varies within the rather limited range of feasible steps and beats. The other one is psychological. It is less a tempo proper than a mood: the Italian word *adagio*, misused for a tempo, implies moderation and leisure; and *allegro* means, basically, gay and content. When J. J. Quantz (1752), who will be quoted and discussed in a later chapter, apportions M.M. 80 to the half note in *presto*, to a quarter note in *allegretto*, to an eighth note in *larghetto*, and to a sixteenth in *lento*, he misleads the reader completely. For all his alleged tempi are simply the assignments of different note symbols to one and the same beat—in fact, *proportiones* in the sense of the Renaissance. They do not become actual tempi without those imponderables that every good performer knows: the same metronomic tempo can be given a driving or a hesitant character.

Not frigid metronome figures, but "the movement's inner measure is the sole determinant," said Robert Schumann.

❀ ❀ ❀ ❀ ❀ ❀ ❀ ❀ ❀ ❀ ❀ ❀ ❀

CHAPTER 2

Beginnings and Primitive Stage

THE BODY'S MOTION. When Hans von Bülow, the great conductor and pianist, boldly decreed: "In the beginning was rhythm," he took advantage of the prerogative of so many pointed sayings: to be pithy, impressive, and unfounded.[1]

Organization of rhythm came long, long after men—like the birds—had given melodic shape to mirth and to mourning.

As long as singers stand alone, without other voices or instruments to join, the urge for strictness in rhythm and tempo is very weak. The melody of backward civilizations, in America, the South Sea Islands, Asia, and Africa, seldom has the mechanical discipline for which all higher cultures strive. Attention of primitive singers and listeners does not, as a rule, carry beyond the short, individual verse and reawakens only after a few irrational moments of respite.

Western concepts that a modern transcriber might be tempted to suggest for the sake of easy reading are dangerous; bar lines and time signatures at the head of a staff give a false account of this freedom and irrational character. Even where *we* think that a certain song "is" in 2/4, or one–two one–two, a subsequent verse line could easily have a few syllables more or less and force the melody to follow suit. And the listener is left in doubt whether the singer has switched to 3/4 or to 2½/4, where he actually has not switched at all.

Moreover, the same melodic line would often serve for poems

[1] Bülow's opinion was shared by Vincent d'Indy (*Cours de composition musicale*, Paris, 1912, Vol. I, p. 20).