

IN RESPONSE TO INSTINCT—KAREN TUTTLE'S INSIGHTS INTO THE COORDINATED ACTION—ITS MECHANISMS, ARTICULATION, AND PREREQUISITES

by Dr. Robert Dew

Coordination is defined in the dictionary as a state or relation of harmonious adjustment or functioning. In the present context it denotes a relationship between the horizontal movement of the bow with discrete movements of the neck, shoulders, chest, and pelvis. Its importance is that coordination permits the inner excitement or nuances of excitement of the player to be transmitted to the sound he is producing. The mechanism of this transmission appears to operate through its effect on bow speed and pressure. In a somewhat automatic manner, coordination determines the distribution of notes allotted to a given length of bow and influences the dynamic level and intensity of the sound of each note.

The physical movements of the neck, etc., are collectively referred to as a "release." The aptness of this term can be appreciated from a simple experiment. If one sings a glissando of an octave interval on the consonance "Ah," one observes that in preparation for (and simultaneous with) the shift from the low to the high note, the head tilts back slightly. Movement is also felt in the soft palate and pharynx. If one intentionally prevents the movement of the head alone, one is immediately aware of greater difficulty in performing the glissando. The palatal and pharyngeal sensations are altered. The vibrato and the smoothness of the shift are impaired and the sound is flattened or deadened (more mechanical). It is evident that the movement of the head—actually a yielding, backward flexion of the neck—in this instance has a "releasing" effect upon the throat which profoundly influences the modulation of the sounds produced.

Playing a stringed instrument, of course, requires simultaneous actions with both arms, and releases also operate to permit freedom of movement and expressiveness in the left hand, e.g., shifting and sliding. However, despite the added

complexity, the releases in string playing are qualitatively the same and not necessarily more pronounced or obvious than those involved in singing. The neck, shoulders, chest, and pelvis must be mobile and respiration uninterrupted and uninhibited. Release movements are predominantly subtle, have a soft, yielding quality and, in those players inherently capable of them, they appear smooth and natural rather than extraneous or self-conscious. The release preceding a bow change, for example, involves both the neck and shoulders; yet, all the observer may see is a barely perceptible nod of the head or slight lifting of the instrument. Nevertheless, the smoothness of the change is as much depending on this release as was that of the vocal glissando illustrated above.

Coordination makes audible small changes in dynamics and in the intensity of the sound. It also affects the temporal spacing and the subtle emphasis of certain notes. These effects breathe life into music. The printed score, no matter how detailed, can only suggest its emotional content;¹ it is not a cookery book. The player's emotional excitement from what is printed constitutes his musical experience; he must translate this into sounds which will induce a similar experience in the audience. But a "letter perfect" execution of all the notes and expression marks alone—as difficult and admirable as this may be—will not fully achieve this end. The emotional "life" of the music is contained in a language consisting of waves of rising and falling intensity, in the stretching of certain notes and spaces—inflections for which there are no conventional symbols.² These are the very things which move us in a performance, which draw from us that collective sigh of "Oh, yes!" when we hear them, and which make us instantly recognize the difference between mere performance and thrilling, musical artistry. It is the effect

of coordination to get the humor, tenderness, sensuality, etc., inspired in the player by the music out of him, through his instrument, to the listener. Coordination is thus inevitably linked to projection. Projection utilizes coordination to convey the musical experience of the interpreter to the audience. In short, coordination operates in the sonic transmission of emotion.

THE MECHANISMS OF ACTION IN COORDINATION:

Intensity

As we have indicated, a major action of coordination is its influence on the intensity of the sound. We might even say that intensity is the chief "currency" of coordination. Intensity is somewhat difficult to define. Volume, in contrast, is of course understood by everyone to be some relative level of loudness (which can actually be measured in decibels). Intensity is something else altogether. Aesthetically we recognize it as a quality of excitation in the sound—perhaps a kind of reediness or nasality of timbre comes close to describing it in string sound. Intensity is affected by bow speed and pressure; lower speed and higher pressure, for example, heighten intensity.³ Higher bow pressure also tends to increase volume, which is probably why intensity and volume often rise together. But intensity may also be largely independent of volume and, further, unlike volume, it is clearly a function of overtone modulation.

A rise in the intensity of the sound (even with a minimal change in volume) creates psycho-acoustically the experience of increasing excitement, while a decrease in intensity conveys a relaxation. Intensity is thus a force (independent of rhythmic forces) which gives the music direction. Marcel Tabuteau, who taught oboe, woodwind, and string classes at the Curtis Institute of Music, made the analogy that merely playing louder was like racing a car engine in neutral; one makes a lot of noise without getting anywhere. This "getting somewhere," this moving forward or pulling back in excitement, is not then simply a matter of "louder" and "softer" or even "faster" and "slower"—although these variants may be simultaneously involved. It consists primarily of waves or pulsations in the intensity of the sound. As intensity builds to its peak, bow speed is decreasing and bow pressure increasing; relaxation in intensity occurs as a result of a speeding up of the bow and easing of pressure. The physical release in the neck, shoul-

ders, etc., immediately precedes or initiates the change in magnitude or direction of the intensity. Coordination, through its effect on bow speed and pressure, therefore, regulates sound intensity (and small dynamics) so as to reveal an excitation-relaxation wave or pulsation.

An error students sometimes make in this connection is to assume that with the release the entire upper body is meant to relax completely or even become flaccid. This may cause a kind of collapse in both the intensity and volume of the sound which may be neither intentional nor appropriate musically. This confusion of "release" with "going limp" actually thwarts the coordination function. Release, of course, does signify a local muscular relaxation; but this is almost always linked to a simultaneous increase in muscular effort elsewhere. If we think about it, we realize that with virtually every animal movement, one set of muscles must relax while the opposing set is contracting (a snake gliding through the grass is a good example of myriads of simultaneous contractions and relaxations resulting in smooth, sinuous movement). The releases of which we speak simply permit a more synergistic and effective cooperation of action, i.e., a coordination of the "playing" musculature.

Another related problem is that of "squeezing" or excessive bow pressure. Some players do this in a misguided effort to intensify the sound (or simply play louder). Squeezing is not only unpleasant to the ear; it also obliterates subtle variations in pressure which, musically, creates an unrelieved tension that inevitably becomes dulling to the listener. Moreover, squeezing is often associated with tension in the jaw, neck, and shoulders, which hinders coordination and, thus, overall emotional expressiveness.

Articulation

In speech, we are aware of how subtle alterations in articulation can change the meaning of a group of words. The speaker makes use of accentuation or emphasis on certain words or syllables, the placement of pauses (vocal punctuation), as well as variations of intensity and pitch. Articulation in music accomplishes the same thing in very much the same way. Obviously, a crucial element in articulation is timing, because, considerations of intensity aside, all articulations involve some kind of grouping or separation of notes. In this, the actions of the right and left hands must be precisely coordinated. The

complexity of this interaction cannot be overestimated and, at higher levels of performance, it is the success of literally hundreds of these articulations on which great music-making so heavily depends. The physical releases of which we speak not only facilitate the action of the bow in the articulation, but that of the left hand as well. In addition, the release also permits a synchronous and complementary action of both hands.

One can almost hear a chorus of dismay and exasperation rising up at this point: "Playing is already complicated enough; now we're supposed to worry about this 'coordination' on top of everything else!" We should reassure the reader of two things. First, the situation is not hopelessly complicated. The same single release simultaneously yields both the change in intensity and the articulation (and, incidentally, this is true regardless of the player's choice of articulation). Secondly, biological activities, no matter how simple and brief in duration, often seem complicated when one attempts to dissect them with words. Coordination is a natural function which, in the absence of impediments, occurs spontaneously. Good popular singers and jazz musicians, without formal musical education, do this more consistently and a good deal less self-consciously than most classically trained musicians. This is probably because classical training seems to have evolved with so many inhibitory traditions, particularly with regard to meter and tone production. In pop and jazz, coordination (although it is not known by any such term) is, as a matter of course, instinctively integrated into the process of mastering the instrument and repertoire. This has generally not been the case in classical pedagogy.

Before leaving this subject, we should mention the role of coordination in ensemble playing. Release movements—even the subtle ones—telegraph the leader's intentions, whether it be the attack, or the timing of a note change. Thus, it is possible to actually lead (and follow) articulations, *rubato*, *ritardando*, and *accelerando*. Sometimes in classical playing, but more often in jazz groups, the ensemble playing seems impeccable without the players appearing even to look at one another.⁴ We believe this is made possible because each player is coordinating individually, but simultaneously with the others in the section. The strong, steady beat in jazz may be a factor in

this; but, of course, it is also the result of like-minded, sympathetic, and experienced people playing together for a long time. Nevertheless, it is apparent to us that the language of this communication or rapport goes beyond hearing and seeing, and, in fact, depends on an impulse which moves all the individuals at the same instant. It is like the exquisite unison of a school of fish changing direction.

PREREQUISITES FOR COORDINATION: BOW TECHNIQUE AND SOUND PRODUCTION

We have emphasized that coordination is a natural function which will operate spontaneously if nothing interferes with it. The relevance of the bow technique in sound production is simply that coordination cannot occur or "penetrate" barriers of rigidity in the execution of the legato stroke. There are, in other words, certain technical parameters whose violation will make coordination difficult or impossible.

Experience shows that attempts to bring out the coordination function will be frustrated, even with a receptive student, if the means by which the sound is produced impose restrictions on certain movements and sensations. The student may, in some cases, have to face giving up the methods by which he is accustomed to obtaining "his" sound. This may prove to be an excruciating and frightening undertaking, particularly if he has had a measure of success in what he has been doing previously.

In a later article we will go into considerable detail regarding not only the "middle" of the stroke, but also bow changing. While we recognize that a certain variability is inevitable in biological mechanical systems, it is also true that the laws of physics cannot be repealed; all fine players must ultimately be doing the same kinds of things physically. These things need isolating. A flexible bow technique, the capability of a true *sostenuto* over the entire length of the bow, and smooth, assured bow changing are necessary prerequisites for the successful operation of coordination. ¶

Although the principle of coordination as it is presented in this article is an original discovery of Karen Tuttle, she recognizes that certain material relating to bowing technique is not necessarily new. She also acknowledges and is grateful for the influence of William Primrose, D.C. Dounis, Pablo Casals,

Marcel Tabuteau, and many others, whose insights helped to shape her musical and technical point of view. She also acknowledges her debt to Wilhelm Reich, whose ideas were indispensable for her understanding of the phenomena of the physical release and pulsation in the realm of musical performance.

Dr. Robert Dew, M.D., studied with Karen Tuttle and Ivan Galamian at the Curtis Institute. After a long layoff, he resumed practicing the violin in earnest. With the advantage of a more mature perspective, he began to tackle technical problems he had skirted as a youth. There were significant improvements in the left hand, but certain difficulties encountered with bow control and tone production brought him back to study with Karen Tuttle. It was then that she introduced him to the concept of coordination and its related bowing technique, which she had formulated over the intervening decades of work and experience. It was out of his appreciation and gratitude for what she taught him that this article was written.

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NOTES

¹ This is perhaps epitomized in baroque music in which little more than the notes was written out. Much was left to the imagination and discretion of the performer.

² Imagine the most beautiful line of Shakespeare recited without these inflections and the resultant effect on its impact and intelligibility.

³ Vibrato also affects intensity. A faster, narrower vibrato increases the intensity of the sound.

⁴ If you doubt this, listen to the ensemble playing in the great big bands such as Ellington's or Basie's.

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