Second Bassoon Is Too Loud

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My introduction to music dynamics was abrupt and painful. After six pleasant, but rarely exciting, years as a clarinetist, I switched to the bassoon when I was in the tenth grade. Three months later, I joined the community orchestra that rehearsed weekly in the school bandroom. My first rehearsal began with Tchaikovsky's *Romeo and Juliet*, which opens with a short chorale for two clarinets and two bassoons.

The conductor stopped us after the first note and announced, "The second bassoon is too loud." The next time, I played that initial F♯ as softly as I could. More menacingly than before, the conductor said, "Second bassoon *must* play pianissimo." No one had ever asked me to play so quietly. After two more unsatisfactory tries, I was red with embarrassment, but the conductor finally continued. Fortunately for me, the town was short of bassoonists, so I was invited to return.

That first rehearsal both frustrated and exhilarated me. It was gratifying to play music that was not watered-down with a group of people who took their responsibilities and the music seriously. Although my ability to play pitches and rhythms seemed adequate, my dynamic range wasn't, as the conductor made eminently clear. During every rehearsal for the next few months, he stopped us dozens of times, it seemed, to announce that my piano or pianissimo was hopelessly overpowering.

Another player might have escaped such humiliations by changing instruments or conductors. I'm happy now that the possibility never occurred to me. Instead, I did my best to expand my dynamic range. I asked every bassoonist and teacher I knew for advice on how I could play more softly. After a year of working at it, I had acquired some special fingerings and techniques for adjusting the reed that produced a very soft pianissimo as well as a powerful fortissimo.

Although I have been active as a bassoonist for fifteen years since those high school days, music-making has seldom been as exciting. I have played with more talented amateur and professional musicians, but rarely has a conductor insisted on effective dynamic contrasts. Equally rare are players capable of producing them. As a result, I have participated in many performances that have been accurate in pitch and rhythm, but have lacked the vitality that dynamic contrasts can give.

A performance without dynamic contrasts, however perfect otherwise, is bland—like the background music one hears in restaurants and discount houses. This music is de-

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signed to oil the wheels of commerce. It is a sort of sonic wallpaper, dressing up the surroundings, masking other noises, but never distracting the customer. Music without dynamics is perfect for this purpose—even the *1812 Overture* could be used as insipid background music if all its loudness variations were removed. On the other hand, large dynamic contrasts make a performance sparkle: The ethereal pianissimo gets the audience on the edge of its seat, the sustained crescendo exhilarates, and the subito fortissimo jolts the wandering ear back to undivided attention.

How effectively do musicians achieve dynamic contrasts? One way to answer this question is to listen to performances. Most bands and orchestras rely on loud brass and percussion sections to produce most of the dynamic variations. As you listen, try to concentrate on a single instrument. Can you state with any confidence the flutist's dynamic level without knowing the score? With most ensembles, the answer is usually negative.

This question can be answered more objectively by studying research data on dynamic ranges, such as those obtained from eleven professional bassoonists from orchestras in Philadelphia, Boston, Cleveland, Detroit, and Berlin.[1] Data for other orchestra instruments were obtained from the best musicians in three Boston amateur orchestras.[2] I believe these measurements are typical of musicians throughout the U.S.

When an instrumentalist plays a chromatic scale as evenly as possible, there are changes from note to note. These accidental variations in loudness, caused by imperfections in the design of any instrument, measure about six decibels from one pitch to the next. Fortunately, the ear ignores these unintended irregularities in loudness during a performance. An intentional variation in loudness or dynamic contrast, therefore, must exceed this six-decibel amount. For the change in loudness to be perceptible, a phrase played piano must be at least six decibels louder than a pianissimo phrase and at least six decibels softer than a mezzo piano phrase. This means that a player needs to be able to produce a loudness range of at least thirty decibels in order to handle the six standard dynamic levels.

The amateur and professional musicians in the studies mentioned here fell far short of this mark. For example, the amateur oboists demonstrated an average difference of 7.4 decibels between pianissimo and fortissimo. In other words, the extremes of their dynamic range just exceeded the six-decibel threshold of audibility, so the difference between pianissimo and piano or even mezzo piano and forte would have been imperceptible.

This limited dynamic range is not inherent in the instruments themselves. For example, the data on Boston area amateur flutists indicate an average dynamic range of 7.5 decibels; a friend of mine who plays the flute and who also takes dynamic markings seriously has an average range of more than twenty decibels and can produce a thirty-two-decibel range on certain notes. The Boston area amateur clarinetists showed an average dynamic range of 8.3 decibels; three clarinet-playing friends of mine have exceeded forty-five decibels in some registers, with averages exceeding thirty decibels. A good string player can manage a dynamic range of forty-five decibels, three times that of the Boston amateurs tested. As a result of my experience with that strong-willed conductor, my dynamic range averages thirty-six decibels, but the group of eleven professional bassoonists and the Boston amateur bassoonists were found to have an average range of only ten decibels.

Many musicians and music educators

[1] Paul Robert Lehman, "The Harmonic Structure of the Tone of the Bassoon," doctoral dissertation (Ann Arbor: The University of Michigan, 1962). Available from University Microfilms, Inc., Ann Arbor, Michigan.

[2] M. Clark and D. Luce, "Intensities of Orchestral Instrument Scales Played at Prescribed Dynamic Markings," *Journal of the Audio Engineering Society 13* (1965).

agree that students need to learn to produce wider dynamic ranges, but there has been a lack of objective tests or a guiding principle for determining how much should be expected or how much is enough. The Conn Instrument Company introduced the Dynalevel device several years ago. This machine responded to contrasts in loudness with colored lights that showed when different dynamic levels were produced. It provided useful measurements of accomplishment and improvement, but was expensive and somewhat bulky.

I propose the following philosophy of music dynamics that student musicians can readily understand: Different dynamic markings should generally correspond to *audibly* different loudness levels in performance. Composers never say how loud fortissimo should be, nor how soft piano is. However, they clearly intend that forte (for a given instrument) should sound softer than fortissimo and that a piano following a forte should sound different than a mezzo piano following a forte. When the distinctions in the score do not correspond to audible differences in the performance, the composer has wasted his ink.[3]

Here is an uncomplicated exercise that will demonstrate this principle for students. It requires no special equipment and no measurement or mention of the minimum thirty-decibel range. Typical band and orchestra music contains the six standard dynamic markings—*pp*, *p*, *mp*, *mf*, *f*, and *ff*. Therefore, each student player should be capable of producing six audibly distinguishable levels of loudness. Choose one student as the player to be tested and another student (or several students) as his listener. The player chooses a pitch and then plays each of the six dynamic levels at that pitch, one by one, identifying them carefully for his listener. This allows the listener to establish reference points for the six dynamic levels. Then the player produces these same levels in a mixed order—for example, *mf*, *p*, *f*, *pp*, *p*. If the player's dynamic range is too small, the listener will have great difficulty hearing the difference between neighboring levels, such as *mp* and *mf*. If the player's dynamic range is adequate, the listener can readily identify each of the six levels as they are played.

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The overburdened instrumental teacher may justifiably feel that he has no time to teach all his players about dynamics. After all, dynamic control is probably the most difficult aspect of mastering an instrument, and furthermore, missed pitches or inaccurate rhythms are more obvious than wrong dynamics to the parents and supervisors who hear school bands and orchestras play. However, some balance is desirable among accuracy of pitch, rhythm, and dynamics. An occasional reminder, perhaps in the form of the exercise I have described, should serve to spur the more capable players into exploring the dynamic limits of their instruments. Very often some improvement can be realized immediately, making the music more exciting for the player and his listeners.

[3] Naturally, dynamic adjustments frequently must be made. For practical reasons, a *pp* may have to be extra soft if it accompanies a weak voice or louder than usual if the passage is a solo.