PUSHING BOUNDARIES (BY THE DUO HEVANS)

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1. Introduction

Both individually and as the duo Hevans, we are active in the exploration and development of playing techniques for our respective instruments. Our research work has encompassed many new/contemporary techniques, but our focus for several years has been the advancement of microtonal performance on our closed-key, single-reed instruments. Our initial objective was to play microtonally, quite simply, playing steps smaller than semitones on instruments that were invented and built to do just that. Microtonal playing required a different approach to single-reed performance. Our research progressed quickly as our focus shifted more to addressing the accuracy of the microtonal pitches. As a duo we wanted to push the boundaries and play precise/exact microtonal pitches.

2. Reference material

There is pre-existing reference material relating to microtonal playing on both the saxophone and the bass clarinet. These consist of charts with fingering patterns for each pitch alongside any other information deemed relevant, for example embouchure position or difficulty level. The instrumental manuals which contain the charts mainly cover 24-tone microtonality, the interval commonly known as a quartertone. For each of our instruments we discovered one source that also documented fingering patterns for 48-tone microtonality, eighth-tones. No material was found to exist about playing uneven microtones on either of our instruments.

We studied the source material and tested each fingering pattern for its pitch accuracy across a range of instrumental makes and models. The results showed a high level of pitch inaccuracy amongst the fingering patterns in existing sources and, therefore, an overly heavy burden on correcting each pitch using the embouchure. One bass clarinet source even provided the same fingering patterns for some quartertone and eighth-tone pitches: whilst both pitches could certainly be played using the given fingering pattern, such an approach presupposes that it is the embouchure which will assume the primary role in playing these microtonal pitches, not the fingering pattern.

On single-reed instruments the embouchure is an essential part of each note played, but the adjustments/changes made between the majority of notes are small. Larger changes to embouchure position may physically inhibit other playing techniques, for example vibrato. Indeed, larger changes made to embouchure position could cause problems for the player and negatively influence the sounding result.

A study was also made of pieces for our instruments which included microtonal elements. Whilst the majority of pieces made use of quartertones, two solo bass clarinet pieces included a different microtonal division of the scale: sixth-tones. Alois Hába's *Suita* opus 96 (1964) written for Josef Horák, and Jos Kunst's *Solo Identity I* (1972) written for Harry Sparnaay. Fingering patterns written in the scores of the dedicatees were found to not match the required microtonal pitch, a sixth-tone, but were instead measured as quartertones. An important step in proving the microtonal capabilities of our instruments and the benefits of our approach was the discovery that Bok was able to find applicable fingering patterns for the sixth-tones in these compositions.

3. The duo Hevans approach

We both felt that the embouchure executes an overly crucial role in microtonal playing when the fingering patterns documented in existing sources are used. The onus has been on correcting pitches using the embouchure rather than trying to find the closest possible fingering pattern which then requires only minimal embouchure adjustment. Whilst acknowledging that finding and using alternative fingering patterns requires more player input than making embouchure adjustments, we prefer the stability that this approach brings with it.

Although the embouchure is an element of single-reed playing that, obviously, cannot be circumvented, the extent to which it is employed to play microtonal pitches can be limited. Therefore, we have actively chosen to constrain the role of the embouchure in microtonal playing to that which it fulfils in 12-tone/semitonal performance.

Having restricted the influence of the embouchure the greater part of the burden for playing any microtonal pitch therefore falls on different or adjusted fingering patterns. In order to be able to find the greatest number of alternative fingering patterns we *released* fingers/digits from their relatively fixed standard playing positions, a decision which meant that fingering patterns could be developed that would not have been possible if digits had remained fixed to their generally assigned keys. This resulted in much more information that needed to be notated and memorized: not only did we have to remember which keys are closed for any pitch, but also which fingers/digits are used to close them. This phenomenon previously only applied in limited terms to the bass clarinet—relating to the keys operated by either the left or the right hand little finger—but was hitherto not seen on the saxophone. The resulting fingering patterns do exhibit timbral changes; equally it is only possible to play some within a restricted dynamic range. These were both aspects found in the pre-existing material and are due to the build/acoustics of the instruments.

Our approach for developing microtonal fingering patterns for uneven divisions of the tone differed little from that which we applied to even divisions of the tone. The lack of 12-tone pitches to which we could relate our fingering patterns meant that we would sometimes have to think outside of the box for solutions. Our desire to reduce the margin of error in our fingering patterns resulted in three versions of the 31-tone scales for the bass clarinet, each one more accurate.

Furthermore, we were in the process of assessing the root-overtone system, an aspect of single-reed playing that has not previously been harnessed for its microtonal prowess. The root-overtone system on the bass clarinet refers to the bass clarinet's ability to sound microtonal pitch variations by utilizing the notes of the natural harmonic series based on the root fingering patterns from C1 to B-flat 2 (the lowest octave plus the next minor seventh). These microtonal variants can be either single, isolated pitches (monophonic), or a cluster of overtones (multiphonics).

4. *Bat Kolu Song* by Henri Bok

A direct link to the most recent phase of the ensemble's research is Bok's latest work, *Bat Kolu Song* (2018), which combines three different microtonal scales: 31-tone, 48-tone, and 41-tone. The juxtaposition of disparate microtonal systems became a clear artistic goal in Bok's recent compositions. Since its premiere at the NASA (North American Saxophone Alliance) biennial symposium in Cincinnati on 9 March 2018, the piece has been extensively developed, now incorporating root-overtone microtonal variants alongside the original three microtonal systems.

The first movement of *Bat Kolu Song*, *Bat*, which is the Basque word for one, introduces the 31-tone microtonal scale directly following the semitonal opening phrase.

In the last section it showcases the microtonal richness of the tenor saxophone, whilst the bass clarinet plays a repeated ostinato, changing between semitones and 31-tones, each ending with a sustained note.

The second movement, *Kolu*, which means three in Hawaiian, concerns the biggest number of microtonal steps per octave: 48-tones. Matching the 48-tone pitches was a huge challenge for the duo, as control of fingering patterns and embouchure had to be optimized. Root-overtone microtonality is particularly prevalent in the bass clarinet part at the end of the movement, where the choice of different roots for the octivated pitch in the bass clarinet part results in many microtonal variants.

The third movement of *Bat Kolu Song* introduces 41-tone microtonality. This uneven subdivision of the tone is the latest microtonal challenge for the duo. When writing for the duo Hevans, one of the most important artistic incentives was the merging of the two different instruments in the context of small microtonal intervals. The proximity of the pitches in the three distinct microtonal scales meant that it was crucial to apply the same level of accuracy when developing fingering patterns for use in 41-tone as had been done with both 31-tone and 48-tone. When the individual results were combined, it was a great satisfaction for the duo to discover that the 41-tone microtonality suited both instruments well and that the intonation between the two instruments could be handled very naturally.

Bat Kolu Song turned out to be a very effective vehicle to achieve the microtonal aesthetics of the composer: microtonal pitch differences enhancing timbral changes of the melodic material, perfect microtonal unison and harmony versus the clash of dissonances caused by the pairing of different microtonal systems, and the integration of familiar melodic context with the alienating effects of microtonal counterparts.

5. Conclusion

As we have worked on different microtonal scales we have developed and refined our approach. The duo's openness to exploring all possibilities has facilitated the pushing of microtonal boundaries and the integration of our research in a composition.

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