Please refer to a previous paper 'Partials and Partial Motion' as an introduction. Partial is a loosely defined term borrowed from acoustics, i.e. from the harmonic series. In the context of expanded tonal harmony such as occurs in post 1940s jazz improvisation or 'bebop' as it is often termed, partials generally describe the members of a scale when placed in vertical chord of diatonic thirds. 'Lower partials' usually refers to what in the vernacular we term 'chord tones', or 1 3 and 5, while 'upper partials' usually refers to the 9th, 11th, and 13th. The seventh is a bit of a toss up. The question is, does the tone in question, in this case a major or a minor 7th ( actually an 'H') serve to stabilize the tonic or destabilize the tonic. To my ears they both serve to stabilize the tonic so I am tempted to call them lower partials.

Note, when using the generic term 'partials' it doesn't matter if the tones are altered or not. They will always be upper partials of some scale.

So really, upper partials add whole step or half step dissonance relative to the lower or resolution partials. An expanded tertian stack such as this is therefore a complexity, having resting and moving tendencies at the same time. This is what attracted Debussy, Messiaen, Charlie Parker, Lester Young, to them. It was not easy to describe how upper partials related to lower, but it was noted that the chord became more interesting, more dissonant, so we collectively came up with the term 'colour' or 'colouristic effect', etc.
An upper partial with a lower partial in the same register will result, obviously, in a cluster, a blur of some kind. It doesn't really matter, arguably, if the upper partial lies above or below the lower. Perceptually there is a loss of clarity and the functional potentials of the tones are reduced. One might use this effect if one wanted to simulate percussive sounds, for example. This is what is so interesting and fertile about upper partial structures placed in an upper register- One is aware of three things for each pair of upper-lower partials:

a) one still hears and anticipates the functional position and tendency of the lower partials. (attenuated slightly) b) at the same time the vertical relative consonant or dissonant quality of the new intervals between the two tones, and c) one hears and anticipates the linear dissonance of the upper partials with respect to their anticipated resolution (already sounding an octave below)

To describe the qualities of the vertical-pair relationships we will use the terms, 'bite' 'blur', and 'noise'. We could use any number of terms here so please don't get too hung-up on the word. We are just talking about a quality of subjective affectation of a vertical 7th or 9th. We would say that by adding a note a certain interval above a lower situated note, this interval projects a certain character.

1) An upper partial sitting a major 7th above a lower (a lower semitone promoted) creates a 'bite' effect. (allowing the chord/voicing to penetrate a busy texture more easily. This interval is also tolerated as somewhat resting) 2) An upper partial sitting a minor 7th (an inverted lower whole tone) above a lower It creates a 'blur' effect. (it doesn't contribute all that much. It is far more likely that the upper partial is left in the lower register as a cluster voicing) 3) An upper partial sitting a minor 9th (an upper semitone promoted) creates a 'noise' effect. (This interval is in most cases not tolerated as resting- unless you listen to alot of 20th century music.)

An 'upper partial structure' refers to the upper component of a tertian stack in which some portions of the lower and mid partials are removed. In jazz practice this is often termed an 'upper structure voicing', or even a 'grab'. Typically the upper structure will be a major or minor triad (statistically the most probable shape in a tertian rendering of a scale resource.), but it is more than that. The upper structure, this isolated triad, is prone to register with the listener through familiarity and pattern recognition alone, in addition to the vertical and linear dissonance potentials. In other words, the listener says, momentarily, 'hey, that's a triad. It sounds like a new key, sort of. How can I hear two keys and yet the same key at the same time'. Through the upper structure voicing the harmony becomes fresh and complex, though it quickly becomes a cheap affectation if over-employed.
To return to the vertical-intervallic dissonance effects discussed above (bite, blur, noise?) we note that all three qualities are used with good effect, but that the major 7th, or 'bite' quality is the most frequent.

There are other adaptations for the upper structure voicing having to do with chord sequence and not the vertical single-chord. In less conservative playing some upper partials can be finessed to 'resolve' to new upper partials above the new root. - Surface voiceleading. For example: the Db tones of the G7 upperstructure voicing, which should resolve (and in fact does in the inner ear) down to C is finessed to resolve up to the D. b2 ought to resolve down to 1, not up to 9. It is a kind of deceptive cadence, resulting in buoyancy.

In other instances, specifically for upper structure voicings of suspensions, for example C/G7 for Gsus, upper partials on a moving chord are, or anticipate, the lower partials of the desired tonic- resulting in a smooth sound and a weaker cadence. (typically one moves 'off' the lower partials on the resolution, for example to D/C or G/C, unless it really is the end of the tune or phrase)
One may note that in practice the upper partials are most often placed, not in strict ascending order, but resemble second inversion major (and less often minor) triads. I can only speculate on the reasons for this. It is suspected that since an illusion of separation or momentary polytonality is desired, it is prudent to break the normal ascending order. Secondly, also to do with separation, one wants the upper structure to 'cut', to be heard. The perfect fourth prevents the triad tones from 'masking' each other, so at least one gets a clear perception of top and bottom notes of the upper structure. In other words the second inversion triad is perceptually 'louder' than the same triad in root position at the same intensity.

Upper Partial Structures:

A. Using Major triads only.

For Major 7th type Chords:
For Mi7 type chords:

For Dominant 7th type chords.

For mi7b5 chords:
B. Using minor Triads Only.

For Major 7th type chords:

For Minor 7th type Chords:
For Mi7b5 type chords:

For fully diminished 7th chords