Joachim Raff An Overview of the Eight String Quartets

By Dr Avrohom Leichtling

Joachim Raff's eight string quartets, written between 1855 (age 33) and 1874 (age 52) fall into three distinct groups, 1-2, 3-5, 6-8. As is to be expected with this composer, the development of style and compositional method is at once wholly original and striking especially for its anticipation of things that would not come to fruition until the twentieth century. For one who is not familiar with these works, the various shifts, even from the first quartet, will prove to be interesting, to say the least. For purposes of discussion, each quartet will first be presented as a descriptive overview of the work in question followed by a structural layout of each quartet.

Quartet No.1 (D minor), Opus 77 (1855)

Inasmuch as there is no string chamber music preceding this piece, but a certain amount of orchestral and operatic work (*Dornröchen, Samson*) written immediately before it, the very first impression of the first quartet is that Raff is not writing a quartet so much as he is thinking orchestrally for the four instruments. The textures are often orchestrally heavy and contrapuntally "dense" - listening to it, one gets the impression that he is trying too hard, that he hasn't yet figured out that a string quartet isn't an orchestra, and needs to be treated differently. This isn't a criticism per se, but rather an observation. Thematic material tends to emerge out of a contrapuntal "environment" - in much the way an orchestral work "prepares" its themes with instrumental figuration - especially when dealing with what, by midcentury, would have been considered more "advanced" compositional procedures.

There are all the other Raffian trademarks present, the use of sequence (small passages repeated over and over on a different step of the operating key), the half-tempo trick in which for secondary material all rhythmic activity is "cut in half" (continual sixteenths and eighths replaced with quarters and eighths created the effect of halving the tempo without actually doing so), the frequent unexpected tonal shifts (his take on Liszt - wholly his own, however), even the use special effects (sul ponticello - "am steg"), etc.

And it is also a very long work - again, thinking in terms of time dimensions and dramatic timing in general that are closer to theatrical, rather than chamber music per se. Given that the work now known as Symphony No.1 (also in D) is on the horizon (if still another four years in the future - an eternity given Raff's productiveness), it might not be too far-fetched to say he was thinking "symphony" - but it came out "quartet." Indeed, it would not be much of a stretch to take the quartet score and "orchestrate" it -- but that's another question for another day.

Original publisher: J. Schuberth & Co.

1- Mässig schnell, ruhig, breit
D minor, 4/4
Sonata form¹: Exposition 1-90 (D minor -> F major)

Development 91-210
Recapitulation 211-346 (D major-> D minor)
Order of themes reversed²
Recap is not literal³ and serves also as the coda to the movement

346 measures

2- Sehr lustig, möglich rasch
D minor, 2/4
Sonata form: Exposition I⁴ 1-67 (D minor)

Exposition II 68-109 (F major)
Development 110-187
Recapitulation II 287 (Bb major) – order of themes reversed
Recapitulation I 262-327 (D minor)
Recap, as in 1st movement, is not literal, and also serves as the coda to the movement

327 measures

3- Mässig langsam, getragen G major, 3/4 Through composed, tripartite form: A: 1-81 B: 82-169 C: 170-184 which serves as the coda to the movement 194 measures

4- Rasch
D minor, C [common time]
Sonata form: Exposition I 1-88 (D minor)
Exposition II 89-161 (F major)
Recapitulation II 254-326 (D major)
Recapitulation I 327-407 (D minor)
- As before, the order of thematic materials is reversed and are not

² Herein referred to as Exposition I, Exposition II, etc.

¹ Throughout this overview, the distinction between Ternary form and Sonata form is based largely on the idea that although both of these can be seen as ternary, a sonata form movement's development is based on the extension and development of the materials presented in the exposition, whereas a ternary form movement will likely have new material for its "middle" section. The problem, of course, is that Raff does not always follow this distinction literally or rigidly. Consequently, the description of a movement's form as ternary or sonata form has to be understood in a very broad context.

³ Raff's adaptation of the functions of recapitulation and coda often derive from Beethoven's example in which the recap and coda are often joined together. Beethoven's recapitulations tend to be direct and complete with the subsequent coda acting as a secondary development. Raff tends to obscure the differentiation between recapitulation and secondary development as coda. This is due in large part to the motivic nature of his thematic materials which easily lend themselves to fragmentation and extension though seemingly endless repetition, sequence and modulation.

⁴ Exposition I, Exposition II refer to theme groups (i.e. 1st and 2nd themes)

literal thus facilitating its use as the coda to the movement as well as the entire work.

407 measures 1274 measures total

Quartet No.2 (A major), Opus 90 (1857)

The second quartet, while still maintaining a quasi-orchestral demeanor, is a great deal more approachable overall than No.1. This might be due to its predominantly major tonality as opposed to the darker minor orientation of the first quartet. Also, there is a much more even distribution of the thematic elements - the first violin functions as one member of the ensemble and not its leader, so to say. Given that there are no other string ensemble chamber works between the first two quartets, the second definitely indicates (to me at least) that Raff had some serious second thoughts about the approach to the string writing of the first.

Other than that, there are some decidedly unusual twists and turns to the way in which Raff approaches the whole idea of tonal orientation - that is, when he modulates from one key to another, it tends to be more sudden than prepared - modulation by common tone - for example C major and C# minor both have the same 'E' in the root triad (C-E-G, C#-E-G#), so that makes for sudden tonal slippage quite easy - and is something Richard Strauss made a primary stylistic element.

Raff makes significant use of ostinatos in this quartet; repeated patterns, or, as I call them "obstinatos" when the same rhythmic pattern uses only one tone. This happens in all the movements. Some of the key relationships are very peculiar indeed - but they work quite well - and the changes of key signature during the course of the movements are quite telling: 1st movement A major to Eb major, A major to no key signature (not C major or A minor) - because the harmonic shifts are too frequent to permit a specific key signature to be necessary.

All four movements are sonata-form structures with Raff's use of secondary developments when coda-time comes around. This isn't original with him, but he does squeeze every last possible permutation out of his materials here.

Overall, a major step beyond No.1. Now, let's see what happens with No.3!

Original publisher: J. Schuberth & Co.

1- Rasch, jedoch rasch A major, C [common time] Sonata form: Exposition I 1-90 (A major) Exposition II 91-170 (E major) Development 171-303 Recapitulation I (A major) – II (F major) 304-474 Coda (as secondary development) – A major 475-575 575 measures 2- Rasch A minor, 6/8 Implied Sonata-Rondo Form: A: 1-56 (A minor) with written out repeat and elaboration B: 57-92 (C major) with transitions back to "A" A: 93-112 (A minor) C: 113-156 (A major), 157-190 (C major), 191-232 (A minor) A: 233-253 (A minor) B: 254-279 (Bb major) A: 280-310 (A minor) – as secondary development/coda 310 measures

3- Langsam, doch nicht schleppend F major, 2/4 Variation form⁵: Theme: 1-16 (F major) Variation 1: 17-33 Variation 2: 34-65 Variation 3: 66-84 Variation 4: 85-98 Variation 5: 99-119 Variation 6: 120-139 Variation 7: 140-159 Variation 8: 160-173 173 measures

4- Rasch
 A major, C [common time]
 Sonata Form: Exposition I 1-47 (A major)

 Exposition II 48-87 (E major)
 Development 88-239
 Recapitulation II -> I but as continued development and then coda 240-344

344 measures

1402 measures total

Quartet No.3 (E minor), Opus 136 (1866)

In the 2nd quartet Raff intentionally moved away from a certain kind of literalness which does require listeners to pay closer attention. It's easy when the music repeats itself in large chunks, but when it works with smaller "units" that are easier to dissect, it can seem like it's more discursive. Technically, however, Raff is simply following the same procedures of subject, development(s), recapitulation, and so forth. For me

⁵ The use of variation form in *this* movement is not clear cut, as in theme with cadence, variation with cadence, etc. Each variation elides into the next one such that elements of one variation carry over into the next while the main developmental aspect of each successive variation emerges out of the elision. The clear distinction between exposition-development-recapitulation has, for all practical purposes, been abandoned in favor of a flavor of through-composed continuity

at least, it's a far more engaging piece intellectually - the process of composition here is not as simple and so, by design, there's much more going on. It is much less concerned with more obvious bits of dramatic stagecraft, and more with a kind of thematic intimacy largely absent from the first. This becomes even more manifest in the 3rd quartet where one point of focus specifically are the harmonic relationships moment to moment and section to section.

The third quartet is a point of arrival, having come after the discursive first symphony, but before the very compact second. Indeed, by this point Raff has figured out how to write a quartet in which all instruments play more or less equal roles - so, like the second where thematic materials *can* be shared, here they *are* shared.

Suffice it to say that each movement has its own particular "shtick" (and I mean that in a friendly way). The first, for example shifts back and forth between triplets and duplets as the underlying textural structure (note: I am distinguishing here between texture as an element unto itself as opposed, say to thematic or purely architectural elements). It makes for an interesting bit of deception - the triplets are almost always placed on top of single quarter notes (one quarter divides into three eighths as a triplet). One feels as if the meter were 12/8 and not common time (4/4). When secondary material (i.e. the "2nd" theme) sneaks in, the replacement of triplets for duplets is quite an ear-opener! Curious also is a one measure phrase at the end of exposition with a new, as yet unheard rhythmic phrase consisting of a dotted eighth, sixteenth, and eighth - which, like a cloud briefly passing under the sunlight, suggests a bit of harmonic darkness, but which becomes a major feature of the development! Like the magician on stage wiggling his pinky at the audience as if to say "look here" Raff sneakily gives you clues as to what's coming.

The second movement "scherzo" is way too slow in tempo to be a full blown scherzo movement, but also way too fast to be a minuet redux! Its secondary material has us in Raff's more "rustic" mode - is that a cow bell in the distance, or a dance after too much beer? Hard to tell - but enjoyable all the same. The traditional repeats are written out because they are not literal at all. Then comes the surprise, a trio of sorts which is repeated, but which plays on the common tone shift I mentioned with regard to the second quartet. Here, it's C# minor and C major. Totally unprepared, typically Raffian, and it must have caused its first listeners a bit of shock. Now, the relationship between C# minor/E major and C major becomes very important in the fourth movement.

The third movement, in C major (E being the common tone between E major and C major) is a theme and 12 variations - all very straight forward - no real surprises - a kind of respite between the earlier movements and the fourth. The eleventh variation shifts to C minor (complete with key signature change) - but the final variation returns to C major, and ends with a distinctly orchestral effect - the music climbs higher and higher until landing on its tonic triad up in the clouds- with only the cello providing its C and G strings far below to end the movement.

The fourth movement, although in E major complete with appropriate key signature, cannot make up its mind if it's going to be in C major or E major. This tertian (third)

relationship forms the underpinning of the movement. It also resolves the would-be 12/8 of the first movement into a consistent 6/8 complete with the dotted eighth/sixteenth/eighth rhythms now transformed into that unrelenting rhythmic figure you know so well from the first movement of the Beethoven 7th Symphony. The development sees the loss of the key signature - too much short range key center shifting. The coda seems to head for G# minor (!) - the tertian relationship turned upside down - but all ends quite neatly in E major.

Overall, Raff's quartet writing comes into its own with this piece in much the same way as the 1st Symphony, for all its bloat, trims down and becomes the real thing with the C major symphony.

Original publisher: J. Schuberth & Co.

1- Allegro, C [common time] E minor Sonata form (repeated exposition [1st and 2nd endings]) Introduction 1-6 Exposition I 7- 36 (E minor) Exposition II 37-66 (B minor) Coda (with "secret motive"[cf m96,98]) 67-105 Development 106-184 (featuring "secret motive") Recapitulation I 185-295 (E minor) Recapitulation II 206-277 (G# minor->E major) Coda 278-330 (2nd development in effect) 330 measures 2- Allegretto con moto, 3/8 E minor Tripartite/Rondo form A 1-16,17-34,35-54 B 52-102 A 103-154 (as above) C 155-170 (E major), 171-194 (C# minor-C major), 195-107 (with repeat) A 208-259 (E minor) B 259-282 A (with elements from C as coda) 283-300 300 measures 3- Andante con moto, 3/4 C major Theme and 12 variations Theme 1-12 Var. 113-24 Var. 225-36

Var. 5 61-72 Var. 6 73-96 Var. 7 97-108 Var. 8 109-120 Var. 9 121-132 Var. 10 133-194 2/4, Più mosso Var. 11 195-218 3/4, C minor – meno mosso- quasi Larghetto Var. 12 219=248 C major (also as coda) – Tranquillo

248 measures

4- Allegro con spirito, 6/8 E major Tripartite/Rondo form A 1-34 (E major) (preceded with transition from C major to E major) B 35-68 (B major) A 69-108 (E major) C 109-163 (A flat major without key signature) A - B 164- 229 (E major) A 230-249 Coda 250-271

271 measures

1149 measures total

Quartet No.4 (A minor), Opus 137 (1867)

The 4th Quartet seems on one hand to look both backwards and forwards simultaneously. I say backwards primarily from the evidence of the first movement whose thicker opening textures and first violin dominance seem to point to the "orchestral" first quartet - but understand that the key expression here is "seems to." The cello finally comes into its own with being given the secondary material of the exposition. There is, however, one little twist. Ordinarily when a sonata form movement is in the minor mode, the secondary materials often occur in the relative major key (i.e. A minor - C major). Here Raff does what he does best, which is to take tradition and turn it on its ear. Our secondary material effectively in in E minor - not at all the place you'd expect it. As if to provide the requisite middle finger for those who'd object to this bit of tonal corruption (...), the exposition ends, at the last possible minute, in the relative major, C major. After much development, the recapitulation presents a variant of the opening, in the "proper" key. When one sees a key signature change to three sharps (A major/F # minor) one expects that Raff will do the "right" thing. What you see, however, ain't always what you get - and in this case, the music shifts first to C# minor (!), but ultimately to F# minor (which is, after all, the relative minor tonality of A major). By its end, the recap ends abruptly in E major, the dominant of A - and is followed by one of Raff's coda-as-secondarydevelopment conclusions, in A minor.

Now, remembering the tertian relationships from the third quartet (key relationships by thirds), and the cute trick of showing you one key signature but really settling in another, the second movement, you might expect on the basis of the key signature (1 flat) that the scherzo second movement would be in D minor - which would be a close relation to A minor. However, no thank you, the second movement is fairly straight forward piece in F major, a third below A. Nothing is repeated literally - all the traditional repeats having been written out with their variant forms.

The third movement retains the 1 flat signature, but is clearly in D minor. It is a broadly structured tripartite movement (A-B-A) onto which elements of the variation approach seem to have been borrowed from the slow movement of the third quartet. There are no harmonic surprises in this movement, everything is rather straight forward other for the fact that the "squishing together" of sonata form and variations would appear to have been taken to the next level, shall we say.

The finale begins in homage to Beethoven, particularly the opening of the fourth movement of the 9th Symphony which, as you know, recapitulates bits and pieces of the earlier movements before actually getting on to the main subjects of its discourse. So, at first we have a bit of recitative accompagnato primarily for the first violin and the cello (i.e. the thematic presentation sequence of the first movement) - followed suddenly by a restatement of the opening of the first movement - followed by a bit of presto foreshadowing of the main materials of the finale - followed by a restatement of the third movement's D minor theme when "all of a sudden" the final proper begins, a straight forward sonata allegro movement in A major whose rhythmic duality stems directly out of the third quartet (the suggestion of 6/8 in the melodic voices, 2/4 in the others). As in the third quartet, the triplets of the opening become duplets (true 2/4), but only enough to make you think there's been some kind of metrical shift. In fact there hasn't really been one because neither has much time before being shifted one way or the other - a interesting bit of dualism and intentional vaguery (to coin a term, perhaps). An accelerando to prestissimo ends the piece in a brief A major coda, triplets, duplets and all.

Original Publisher: J. Schuberth & Co.

1- Allegro patetico (quasi alla Breve), C {common time] A minor Sonata form (repeated exposition [1st and 2nd endings]) Exposition I 1-49 (A minor) Exposition II 50-112 (E minor) Development 113-209 Recapitulation I 210-258 (E minor) Recapitulation II 259-321 (C# minor->F# minor->A major) Coda (as 2nd Development) 322-409

409 measures

2- Allegro, non troppo vivo, quasi Allegretto, 6/8 C major Ternary form (A) I 1-36 (F major) II 37-82 (C major)

(**B**) 83-138 (Ab major)

(**A**) I 139-177 (F major) II 178-211 (Bb major) Coda 212-269

269 measures

3- Andante, 3/8 D minor Variation form Theme 1-24 Var. 1 25-51 Var. 2 52-87 Var. 3 88-155 Var. 4 156-206 Var. 5 206-244 Coda 245-269 269 measures

4- Andante, 2/4 - then Presto (Finale), 6/8 and 2/4
Transitional tonality -> A major
Introduction followed by Sonata/Rondo form
Introduction (varying tempi - references to previous movements - see LvB Opus 125#4) 1-60
Exposition has a self-contained A-B-A 61-112,113-167,168-197
Development 198-308
Recapitulation 309-371 a much-condensed version of the exposition and the development.⁶

489 measures

1436 measures total

Quartet No.5 (G major), Opus 138 (1867)

As to the 5th Quartet, one immediately notices the beginning of the break with tradition: an overall kind of neo-classicism - as if the much more involved third and fourth quartets had run their course leaving a certain lack of energy for the fifth. This is not a criticism, but an observation. Raff, as always, is up to his usual tricks - and one of the most subtle is what I will call a seeming juggling of the movements. What? The brief, rough and tumble second movement (in G minor) has a kind of Haydnesque flavor that suggests the kind of finale one would find in a Haydn quartet or symphony (despite the parallel minor tonality). It is consistent with Raff's preference for second movement scherzi, yet the tempo is not really a "rapid-in-one." The fourth movement has none of the urgency one would expect from a finale - and as such gives the impression of being an internal, rather than external movement. Indeed, the third movement is the most intense, emotionally and, in a way, the darkest. The first movement sets the neo-classic tone for the piece with its opening Alberti bass (but

⁶ The shifting between the various thematic and more developmental elements obscures a clear-cut sonata form structure and tends to emphasis a rondo-like alternation.

in the viola), and its periodic theme structure. It begins as a duo, then becomes a trio, and finally a quartet. In this respect, it is much more intimate in character than we have seen with any of the quartets up to this point. All four movements have the basic sonata-form architectural ploys in place even as some of the repetitions of individual sections (even though they are not necessarily literal repeats) do seem to look backwards - intentionally.

I suspect Raff had reached a kind of dead end with this piece - meaning that he understood that the approach to quartet writing had arrived at the point of no return. It would not be possible to continue as he had up until this piece. By the time he returned to the quartet medium, seven years and nearly sixty works later (...), the approach to every formal aspect of quartet conception will have changed altogether. The number of movements per work increased. No.6 has five movements and is referred to as a suite, No.7 has six movements and refers to the subject of one of the most well known of Franz Schubert's lieder and is, in a way, like a song cycle, and No.8 has seven movements, also called a suite but with clear references to Baroque practice. There remains a kind of hide-bound criticism that these last three works are not string quartets at all - because they don't adhere to tradition. But this is nonsense when considered from a much broader, less constricted (or contrived) view of history. The fact that Raff had been physically ill at the time these works were written does not, I think, play a role in the apparent change of direction for the 5th quartet. That Raff's growing interest in reviving the music of the late 18th century (note his participation in the Bach Gesellschaft) and his own personal revival of late Baroque/early Classical approaches to composition is ultimately more significant.

Given what would follow, both looking forwards and backwards historically, Raff had more or less left the "conventions" of the late 19th century behind. The over-affected hyper-emotionalism that generally is understood to be late romanticism plays almost no role in Raff's work which looks forward to aesthetic practices that would not become manifest until after World War I - more than thirty years after his passing. The last three quartets, for all their apparent ties to aspects of conventionality, simply use that conventionality to spring ahead into new territory. The fifth quartet perhaps gives a bit of a prediction of things to come: Mozartean opening, displacement of movement types, much more clarity of expression. However, all the other kinds of Raffian twists and turns are present in this work as well - perhaps only more subtly so.

Again, this is just a broad overview - the actual analysis will be much more specific and detailed. It is unfortunate that there doesn't seem to be a professional recording of this work -- at least we have Steve Jones' "Bedroom Band" which is really quite an interesting technical feat (both in terms of performance as well as editing) even if the full flavor of the work itself leaves what to be desired. The cello's part is the most problematic simply because Steve plays it on a viola whose recording is then lowered an octave to the cello's normal range. It has none of the cello's timbre and, as a result, is often lost in the crowd. That said, the accomplishment of the whole is more than just simply notable. Original Publisher: J. Schuberth & Co.

1- Allegro, tranquillo, C [common time] G maior Sonata form (repeated exposition [1st and 2nd endings]) Exposition: 1a 1-16 G major 1b 17-31 G major / Ab major / A major 2 32-59 D major Coda based on 1b 60-87 (1st ending transition back to G major) Development (from 2nd ending on) 88 -172 Recapitulation: 1a 173-182 G major 1b 183-199 G major G major / Ab major / D major 2 200-227 G major 1b 228-247 G major Coda as extended development of 1a, 2 and 1b 248-301 301 measures

2- Allegro vivace, 2/4 G minor A-A(1) form⁷ 1-G minor 1-20 [20] 2-D major 21-48 [27] 3-B major 49-77 [28] 4-D major 78-113 [35] 3-B minor 114-140 (possible development) [26] 1-G minor 141-180 [39] 2-Eb major 181-208 [27] 3-C major 209-237 [28] 4-Eb major 238-273 [37] 3-C minor 274-304 [30] 1-G minor 305-342 (coda) [37] 342 measures 3- Larghetto, 2/4

C major Variation form with two themes Theme 1 C major 1-20

⁷ The second movement of the fifth quartet has an unusual structure, essentially bipartite, in which the second half consists of a different set of tonalities for the same materials of the first half. The movement consists of four different relatively brief sections (1-2-3-4 with a repetition of the 3rd following the fourth). The first statement presents these as G minor-D major-B major-D major-B minor. The second statement presents them as G minor-Eb major-C major-C minor-G minor. Given the different tonalities in the second half of the movement, a certain degree of adjustment in each section is necessary to achieve the altered tonal arrival points.

Theme 2 C major 21-54 (including extension of Theme 1) Var. 1 (Theme 1) 55-76 Var. 2 (Theme 1) 77-110 Var. 3 (Theme 2) 111-134 Var. 4 (Theme 1) 135-155 Var. 5 (Theme 1) 156-174 Coda 175-185 185 measures 4- Allegretto, vivace, 3/8 G major Sonata/Rondo form A. G major 1-48 B. E minor 49-141 with fugal development A. G major 142-190 C. Eb major 191-257 G minor 258 (as before with fugal development) Β. A. & C. together G major 347-402 Coda G major 403-452

452 measures 1280 measures total

Quartet No.6 (C minor), Opus 192 No.1 (Suite in älterer form) (1874)⁸

Right off I'd say that if you didn't know any of the previous five quartets and No.6 was your first exposure to Raff's chamber music, you would likely not even recognize its composer unless you paid close attention to some of the more subtle details of the piece which might possibly give its author away. Even the implicit neo-classicisms of No.5 wouldn't do it, either. In fact I'd say that it is only in the fifth (...) movement of this (Quartet No.6) work that "the real Raff" finally shows his face, but in considerably stripped down fashion. As I've mentioned previously, there is nothing about the last three quartets (and most certainly No.6 and No.8), aside from their basic harmonic vocabulary which remains steadfastly key-centered tonal, that would cast them as "typical" examples of late 19th century romanticism.

By 1874, the year of composition of the three Opus 192 quartets, Raff still had ahead of him more than half of his 11 symphonies to write, as well as at least four concerti, two orchestral suites, the four Shakespeare overtures, two operas, three major works for chorus and orchestra, and six other chamber music works, in addition other keyboard and vocal works, etc., a rather remarkable output in about eight years' time aside from his academic duties as director of the Hoch conservatory in Frankfurt, and ultimately failing health during his last years.

⁸ The entire quartet is the only one of the eight that is based on a fairly literal use of closed forms complete with literal or near literal internal repetitions – all of them written out, however. Not a repeat sign in sight anywhere.

Raff's interest in the Baroque era was not new by the time of the sixth quartet - and although there is the example of the Piano Suites, indeed of other works entitled "Suite" (itself more a Baroque nomenclature than anything other than as collected excerpts from previously composed works, operas, and the like), the sixth quartet is certainly among the most undisguised instance of intentional re-interpretation of the late 18th century forms. Aside from this, one notices that at about 29 minutes performance time, it is shorter than any of its predecessors. Aside from No.7, which barely rises above the 30-minute mark, No.8, which has the most number of movements (7), is also the shortest of the 8 clocking in at barely 22 minutes!

The first movement of No.6, then, *Präludium*, follows closely the formal layout of any number of opening Baroque instrumental pieces: slow introduction (C minor) - fast tempoed four-voiced fugal exposition followed with extensive developmental episodes which feature occasional restatements of the fugue subject - shorter version of the opening introduction featuring cadenza-like episodes (first violin) - coda based on fugue subject, but cadencing in C major. The combination of Baroque formal procedures with Baroque inflected part writing is notable for not sounding like an 18th century mock-up, but rather as a distillation of Baroque mannerisms. What is more obvious (at least to the extent of trying to identify its composer) is the almost total absence of the kind of chromaticism, tonal slippage and part writing that would otherwise be typical.

The second movement, *Menuetto* (C major), is a very simple, direct imitation of a Baroque minuet complete with contrasting trio. Ordinarily, composers of closed dance forms like the minuet would call for each internal section to be repeated, literally. Raff, however (as has been his practice in any case) writes out repetitions in order to elaborate them upon repetition. At barely 52 measures (which also includes a coda), there is hardly time for much elaboration. The trio, which shifts to C minor, follows the same procedure, but assigns most of the melodic material to the cello. The *da capo* of the minuet (C major) is slightly longer than its original presentation and, aside from the theme itself, the restatement is far from literal - which would be Raff's normal procedure even when the idiom imitated predates him by a century!

The third movement, *Gavotte und Musette*, is perhaps the most intriguing of the five movements primary because of the ear shattering stylist anticipation (...) of the musette! Returning again to C minor, the movement reverses the tonal order of the previous movement (C major-C minor-C major becomes C-minor-C major (...) - C minor). The Gavotte is almost totally devoid of any chromatic shifting, indeed of any accidentals other than an occasional A natural or B natural (as in the C melodic minor configuration). The musette, on the other hand, with its droning open fifths, and irregular sounding phrase lengths making full use of "pregnant pauses" (melodically), goes into some distinctly pan-diatonic 20th century writing which leaves the 19th century far behind. It is perhaps one of the most striking passages in all of Raff's vast catalog! Like the preceding minuet, the recap of the gavotte is longer (59 measures) than its opening (44 measures), and like the minuet, takes some time to make a formal, if brief, coda.

The fourth movement, *Aria*, has the first violin as soloist accompanied by the second violin, viola and cello. The accompaniment's figuration remains almost totally unchanged from first measure to last. The movement departs from C minor not to its relative major (E-flat) which would be expected, but to A minor, an altered minor third below C minor. Here is one of those hints I alluded to before. Its rhythmic spareness is compensated for somewhat by episodes on increasing density (single notes, per instrument, become double stops - i.e. three voices become, in effect, six) which, once the maximum of 7 parts is reached (double stops for v2, vla, vc + solo violin), remains in place to the end of movement. From a certain perspective, it is the most "romantic" of the five movements. In a sense on could type this movement as Romantic-Baroquesism!

The fifth movement Finale (C minor), at 453 measures (as opposed to 310, 199, 169 and 85 measures respectively for the other movements) is probably the most Raffian of the lot primarily due to shifting between triplet and duplet rhythm (as has been encountered often before in the other quartets - and other works, too), its frequent repetitions and intermixing of short, two measure phrases, and its use of the dominant minor (G minor, as opposed to G major) for its "second" theme. Yes, here is yet another hidden sonata form type in which development by extension plays an important role. However, like the preceding three movement, the overarching structure is tripartite - A-B-A in effect. The middle section of the movement moves to C major, and dispenses almost altogether with any kind of rhythmic movement other than for unembellished dotted half notes - which at the principal tempo produces the result (as has been encountered before) as halving the tempo. It begins as a kind of four voiced chorale without any internal counterpoint of any kind. From time to time, a measure of "normal" 6/8 peeks out from beneath the one-to-the-bar blanket, but the overall context (eight bars blanket, two bars peek-a-boo) is repeated six times - again a peek-a-boo of its own viz a more normally expected Raffian gesture. There follows an extended development-recapitulation during which Raff "finally" allows himself to sneak off to some "foreign" keys (E major - A minor) before bringing the quartet to an end rather boisterously in C minor (and yet again, not the transformation to the tonic major).

And now for a bit of "Schubert"---

Original Publisher: C. F. Kahnt (1876)

1-Präludium: Larghetto, C [common time] -> Allegro (quasi Alla breve) (2/2) C minor Prelude and Double Fugue I Prelude (C minor) theme "a" 1-16, theme "b" (Eb major) 17-26, transition to fugue (27-40) II Double Fugue (C minor) a) exposition of 1st fugue subject (41-76) b) second exposition of 1st fugue subject (partial) (C minor-Eb major) (77-100) c) development of 1st fugue subject (101-153) d) double fugue with transformed original subject and new 2^{nd} fugue subject (154-248)

e) Prelude much transformed recapitulation (249-275)

f) coda based on transformed double fugue (276-310) (Piccardy $3^{\rm rd}$ cadence: C major)

310 measures

2- *Menuett*, 3/4

C major (trio = C minor) Ternary form (i.e. Minuet and Trio)

I (**A**) Minuet Theme "a" (C major) 1-8, Theme "b" (E major) 9-16, Theme "c" (A major) 17-32, transition to Theme "a" 33-43, Theme "a" 44-51

II (**B**) Trio (C minor) Theme "d" 52-67, Theme "e" (Eb major) 68-88 – repeat written out and modified 89-109, Theme "d" with transition to Minuet da capo, 110-133

III (**A**) Minuet da capo – written out: Theme "a" (C major) 134-141, Theme "b" (E major), 142-148, Theme "c" (A minor) [pizz this time] 149-166, Theme "b" repetition 167-177, Theme "a" modified as coda 178-199

199 measures

3- Gavotte und Musette, 2/2 C minor (Musette = C major) Ternary form (i.e. Gavotte/Musette/Gavotte) I (**A**) Gavotte Theme "a" (C minor) 1-8, Theme "b" (Eb major) 8-25, Theme "a" (C minor) 26-34, Theme "c" (C minor) 35-44

II (**B**) Musette (C major)⁹ Theme "d" 45-68, repetition/development of Theme "d" 69-98, repetition of Theme "d" with transition back to Gavotte 99-118

III (**A**)¹⁰ literal written out repetition of (A) (C minor) 119-163, coda 164-169

169 measures

4- Arie, C [common time]
A minor
Through composed form, no clear subdivisions as in the previous movements.
85 measures

5- *Gigue- Finale*, 6/8 + 2/4 C minor

⁹ The Musette is built on static sustained open fifths in the cello and conflicting modalities in the other voices which creates the effect of polymodality or polytonality. It is not without precedent in Raff's music, but effect created is definitely NOT of its time. Raff will repeat this procedure in the Gavotte and Musette movement of the 8th Quartet.

¹⁰ This is the first instance in the quartets where the return to the opening section is given without alteration. Raff could easily have written *Da Capo* here – but chose not to do so likely because of the last half dozen measures which function as a coda for the movement.

Sonata/Rondo form¹¹

Introduction (V-V7 C minor) 1-12 I Exposition Theme "a" (C minor) 13-28, Theme "b" (C minor) with development of "a" 29-76, Theme "c" (G minor) with development of "a" and "B" 77-129, Theme "d" (C major) 130-177 (with development of "a", "b" and "c" II Development 178-265 III Recapitulation Theme "a" 266->, Theme "b" 274-> but with continued development – the recap is NOT literal at all, more referential-323 IV New theme, "d" (C minor) in which 2/4 and 6/8 are played off against each other. 324-349, Theme "d" – different version 350 (A minor) -388, Theme "a" (C minor), yet another version, 389-428 Coda 429-453 453 measures

1216 measures total

Quartet No.7 (D major), Opus 192 No.2 (Die Schöne Müllerin) (1874)

Now, as to Raff String Quartet No.7, there's the most interesting contradiction in its subtitle and movement titles. Nominally, one would expect to find them in one of the twenty five poems Wilhelm Müller composed under the collective title *Die schöne Müllerin*, twenty of which Franz Schubert set to music as a song cycle in 1823. But its six movements would appear, title-wise, to have been inspired more by the poems rather than as non-vocal settings of the texts. Similarly, no melody of Schubert is quoted either directly or indirectly even as one can easily detect Raff's approach to melodic writing in the piece is more akin to what one might normally expect in the realm of lieder. Of course, what this means, simply, is that Raff, per his usual methodology, chose to evolve his own unique approach to the lied and the quartet simultaneously by simply combining the two to produce a unique hybrid. Since the result is neither lieder, nor formally a quartet, the title Suite would have been an appropriate substitute. Sly Raff does not do this, however.

Overall, of the six movements that make up this quartet, it is the outer movements which are the longest and most involved. Typically, they are sonata-form constructs as one would expect to find in a more "traditional" quartet. The three interior movements are all much shorter and less complex formally (by orders of magnitude) as if they were instrumental songs. They tend of be much simpler tripartite structures (A-B-A) understanding, of course, that nothing is that simple with Raff, even when eschewing simplicity. In this respect, the title with its obvious references to Müller and Schubert gives to the whole piece both a programmatic element as well as the suggestion that it is a suite of related pieces rather than an integrated work not requiring anything external to justify it. Curious, too, is the fact that it is the middle

¹¹ The final movement of the 6th Quartet largely does away with the closed form/literal (or quasi literal) repetitions of its first four movements. The result more closely resembles the sonata form structures of the other quartets in which thematic elements appear and re-appear throughout developmental episodes. In this case. The periodic reappearance of the initial themes points to an adaption of the rondo with its thematic juxtapositions.

quartet of a group of three whose first and third members are called "suite." Evidently, Raff must have believed that giving the work a literary subtitle was sufficient, as opposed to the other two whose compositional methods were essentially abstract (non-literary) (*Suite in Older Forms, Suite in Canon Form*) and whose methods and syntax clearly evoke the essential elements of the Baroque. The middle quartet, by complete contrast, is purely a "romantic" work stylistically even as it avoids excess of any kind. Raff keeps both excessive emotionalism and harmonic movement well "under control." Raff's voice is clearly heard here as perhaps even an extension of the fifth quartet.

The rest, as before, would involve a play-by-play description of the events of each movement. For now, suffice it to say that the thematic responsibility seems to be shared equally between the first violin and the cello. Indeed, it is the cello which starts the piece off, unaccompanied (even if for only a single measure). While clearly conceived contrapuntally, the textures are largely free of excessive "part writing" - intentionally so as to keep the melodic (i.e. lieder) aspect without much in the way of aural competition. Each movement has its own basic motivic texture, again like a song in which the accompaniment, once stated, never really varies for its duration so as to keep the focus clearly on the melody line. The succession of keys for the six movements - D major, G minor - B-flat major - D minor - D major) are all related to D (major or minor). It is only in the final movement that Raff let's go sufficiently to allow much more extrovert display (although I wonder about the title: *Zum Polterabend* which translates literally as "for the hen party" - there must some German idiom which simply doesn't sound quite right in literal English!

Original Publisher: Ernst Eulenberg, Musikverlag

1- Allegretto, 9/8 D major Sonata form¹² Introduction (D major) 1-12 I Exposition Theme "a" 13-45, Theme "b" (A major) 46-115 II Development 116-151 III Recapitulation Theme "a" 152-193, Theme "b" 194-253 Coda as extended continuation of development 254-322 312 measures

2- *Die Mühle*¹³, 2/4 G minor Ternary Form I (**A**) – G minor 1–112 including development and then transition to "B"

¹² Sonata form is to be understood in the most general sense of exposition-development-

recapitulation. Raff does not always make complete (cut and dried) thematic statements, preferring to dive immediately into their development once the principal motivic elements are presented. The lines between pure exposition, development and recapitulation are blurred at best. "Implication" is the key concept. In this case, development is understood to be a constant.

¹³ The relative brevity of the internal movements of this quartet suggests that they could likened to instrumental lieder (a "wink" to Schubert...)

II (**B**) – G major 113-132 III (A)- G minor 133-188 abridged version 188 measures 3- Die Müllerin, 6/8 Bb major Sonata form *without recapitulation* (!)¹⁴ I Exposition Theme "a" (Bb major) 1-24, Theme "b" (F major) 25-49 II Development 50-124 III Coda 125-154 154 measures 4- Unruhe, 2/2, Allegro D minor **Ternary Form** I (A) 1-40 G minor (constant 8ths/over "dotted" rhythm) II (**B**) 41-83 D minor (only quarters, no eighths)¹⁵ III (A) 84-123 D minor Coda 124-146 146 measures 5- Erklärung, 3/4, Andantino, quasi allegretto G maior

Through composed form *resembling* "A" followed by "B"

There is no real "A-B-A" present in this little movement, just a 16 measure phrase

which is repeated in variant form three times, which passes through related keys (G minor – Eb major {by way of G minor, etc.), eventually landing in D major with fragmented repeated references to the opening theme.

Coda 120-138

138 measures

6- Zum Polterabend, C [common time], Vivace
 D major
 Ternary form

 I (A) D major 1-99 Theme statements with developments
 II (A) D major 100, 107 Theme statements with developments

II (**B**) Bb major 100-187 Theme statements with developments and transition back to "A"

¹⁴ This structurally unusual movement appears to have the elements of a sonata form exposition and development, but there is no formal recapitulation, only further statements of theme "a" variants in distant keys (Ab major, Db major). It is similar to some of the variation movements in the other quartets where the distinction between one variation and the next is not at all clear – hence the idea of perpetual development without the need for unadorned restatement.

¹⁵ Raff's trademark change of tempo that is not a change of tempo, just a doubling of predominant rhythmic values creating the effect of "twice as slow" or "twice as fast"

III (**A**) D major 188-246 truncated version of "A" with transition leading to Coda Coda 247-265

265 measures

1203 measures total

Quartet No.8 (C major), Opus 192 No.3 (Suite in Kanon-Form¹⁶) (1874)

Certainly, the three quartets of Raff's Opus 192 present something of a challenge precisely because they do not operate in the manner one is accustomed to with, say, the orchestral pieces or much (if not all) of the other chamber music of the period. But herein lies their special interest - because they show Raff exploring in a much more formal way rather than by his otherwise spot on intuitive acquisition of skills and specific compositional techniques.

That he chose to formalize these studies indicates to me, at least, that he wasn't merely paying lip service to the Baroque (Quartet No.6), or the more programmatic (Quartet No.7), or even the strictly academic (Quartet No.8), but that he was attempting to make workable pieces of music from what otherwise could be dismissed as academic exercises even if they don't represent the pinnacle of his otherwise unique and distinctive compositional activities! But he was running a conservatory then, was he not, so that academic strictness (especially German rigidity in such matters) would have had to eventually be reflected, in part, in some of the music he wrote. Well, here it is!

Of the three quartets, I found No.6 (*Suite in Older Forms*) perhaps the least interesting musically if only because the imitation of Bachian (or Handelian, Vivaldian, or any other *...dian* of the period) is not quite true to form - too much Raff buried in the otherwise *...dian* idiom! But as an experiment of putting two rather irreconcilable syntaxes together, it's quite interesting on that level at least. The middle quartet (No.7) I find quite listenable and enjoyable. The shorter movements have their own charm, *Biedermayeristic* as they may be! The most intriguing of the lot is the third (No.8) precisely because it the most restricted in scope, and poses none of the stylistic issues that the first two might seem to do. Granted, it is Raff on a simpler lever stylistically - but the restrictiveness is entirely a function of the specific technical method he's exploring. Let me explain a bit.

¹⁶ Strictly speaking, a *canon* is NOT a form, at least in the purely structural sense of the term. It is, rather, a specific kind of strict imitative counterpoint in which each successive entrance of the canon subject is played as a literal repetition of its initial statement without any adjustments for harmonic, and/or other purposes (as would be the case with a fugal answer to its initial statement). The most well-known example of a canon is the song "Row, row, row your boat" – which has two phrases. The canonic imitation occurs at the beginning of the second phrase. Raffs 8th Quartet exploits various diatonic (non-chromatic) forms of canonic imitation at different intervals – at the unison (or octave), 2nd, 3rd, 4th, etc. All of these canons are the underlying contrapuntal principle of what is otherwise a collection of short pieces very much like a Baroque suite - as was the case with the 6th Quartet (but minus the canonic underpinning).

Raff is certainly no stranger to contrapuntal writing which is one of the hallmarks of his work. But there is a difference between free counterpoint and strictly formal counterpoint. The former is identified generally by imitative writing in which the imitations are not necessarily literal, but whose approach is, to a large degree, governed by the underlying harmonic movement, not the other way around. In strict TONAL counterpoint, there are specific rules which are wholly dependent on observing the conventions of tonal harmony.

A fugue, for example, does not require that any voice which answers a statement of a fugue subject be literal. It couldn't be since a fugue subject is generally stated in toto before moving on to subsequent answers that might be in another key and which would require modification. A canon, on the other hand, is the most restrictive, since *cannonic* answers must be literal and in the same key as the subject. Think of "*row*, *row*, *row your boat*" - which is a simple canon, but whose answer begins before the subject is completed - it starts halfway through it. In order to do this, the canon subject has to remain "close to home" harmonically such that it can be imitated literally without producing "illegal" dissonances.

In the 8th Quartet, Raff plays with a number of different kinds of cannonic structures. Most of them are simple A-B constructs - the subject is stated, and answered literally in the same key, before it ends. The canon of the first movement, in C major, is between the two violins. Stylistically, it seems to play off the march-like final movement of the 7th quartet. The second movement, in C minor, a Sarabande (i.e. dance form), is between the first violin and the viola. The third movement (Capriccio) is the most elaborate as it goes through several different kinds of canon. It is a four voiced canon. A secondary episode (G major), is also a four voiced canon, but not at the unison - rather at different intervals - but without modification - which means the canon subject has to be able to allow for this kind of slight-of-hand. The fourth movement, in A-flat major, (Aria) is called a double canon because it is built as two voices in rhythmic unison (...) against two other voices *also* in the same rhythmic unison. As before, the rules of strict harmony are in place. The fifth movement, in Eflat major (Gavotte and Musette) borrows structurally from the 7th quartet, but because it is a canon, it cannot go into the same kind of the proto-20th century harmony - but has to remain "pure." The sixth movement minuet (C major) reverts back to the canon between the two violins, but at a distance of a single beat. The seventh and final movement (C major) again uses the gigue as in the final movement of the 6th quartet - but as a finale, it (the 8th quartet) ties together all the other cannonic techniques into a single movement. Curiously, it sounds the most like Raff, even though it is very stripped down, indeed even bland from a certain perspective, but technically the most interesting.

Perhaps one could consider it like Raff's having gone to the gym, and who is dressed (or undressed) in his gym wear, who goes to lift weights, each exercise intending to focus on a different muscle group in order to develop it to its maximum potential. You have to appreciate the control necessary to do the exercises even as the momentary increase in muscle size is not related to the overall picture of the whole body so trained. in this sense, we are not seeing the whole Raff, just the man, so to say, stripped to his basics - but whose basics are extremely well developed irrespective of any other presentation. Now, how's that for a non-binary description!

Original Publisher: C. F. Kahnt, 1876

1- Marsch, C [common time] Allegro C major

Ternary Form

I (**A**) 1-59 C major - canon a2 at the unison (octave) between Violin I and Violin II- $\frac{1}{2}$ measure apart. Viola and Cello "accompanying" II (**B**) 60-100 F major – canon a2at the unison (octave) between Violin I and Viola – $\frac{1}{2}$ measure apart. Violin II and Cello "accompanying" III (**A**) 61-101 C major – canon a2 at the unison (octave) between Violin I and Violin II – $\frac{1}{2}$ measure apart. (a literal restatement of A – Viola and Cello "accompanying")

161 Measures

2- Sarabande, 3/4, Andante, moderato assai

C minor

A-B-A-B-A - form

I (A) 1-16 C minor – canon a2 at the unison (octave) between Violin I and Viola – 1 measure apart. Violin II and Cello "accompanying"

II (**B**) 17-30 C minor- canon a2 at the unison (octave) between Violin I and Viola – 1 measure apart. Violin II and Cello "accompanying"

III (A) 31-42 C minor – canon a2 at the unison – as above $N(\mathbf{P})$ 42 56 C minor

IV (**B**) 43-56 C minor – canon a2 at the unison – as above

V (A) 57-68 C minor – canon a2 at the unison – as above

68 measures

3- Capriccio, 2/4, Vivace C major A-B-A-C-A form (i.e. Rondo adaptate, as it were) I (A) 1-38 C major – canon a4 at the unison – Violin I, Violin II, Viola, Cello – 1 measure apart, each entrance an octave lower II (**B**) 39-74 G major – canon a4 at the fifth – Cello, Viola (5th higher), Violin II (5th higher), Violin I (5th higher) III (A) 75-112 C Major - canon a4 at the unison - Violin I, Violin II, Viola, Cello - 1 measure apart, each entrance an octave lower (as at first) IV (C) 113-140 F Major – canon a4 at the 7th, 5th and 7th – Cello, Viola (7th higher), Violin II (5th higher), Violin I (7th higher) V (A) 141-178 C major - canon a4 at the unison - Violin I, Violin II, Viola, Cello - 1 measure apart, each entrance an octave lower (as at first) 178 measures

4- Arie, 3/4, Quasi Larghetto

Ab major

A-B-C form as Double Canon (two simultaneous subjects)
I (A) 1-34 canon a2 at the unison (octave) Viola, Violin I canon a2 at the unison (octave) Cello, Violin II
II (B) 35-73 canon a2 at the unison (octave) Viola, Violin I canon @2 at the unison (octave) Cello, Violin II With development III (C) 74-112 canon a2 at the unison (octave) Viola, Violin I Canon a2 at the unison (octave) Cello, Violin II

137 measures

5- *Gavotte und Musette*, C [common time], Allegro Eb major Ternary form

I (**A**) Gavotte "a") 1-8 canon a2 Violin I, Violin II at the octave, $\frac{1}{2}$ measure apart, Eb major

"b") 9-33 canon a2 Violin I, Violin II at the octave $\frac{1}{2}$ measure apart, Eb major with development

"a)" 34-42, repetition of "a" – canon a2 Violin I, Violin II, Eb major, at the octave $\frac{1}{2}$ measure apart

II (**B**) Musette entirely over static open 5ths (Cello and Viola) [see third movement of the Quartet No.6 which follows the same procedure].

"c)" 43-60, canon a2 Violin I, Violin II, G minor, at the octave 1/2 measure apart

"d)" 60-79, canon a2 Violin I, Violin II, G major, at the octave, $\frac{1}{2}$ measure apart static bass on G-D fifth continues)

III (A) literal repetition of measures "a)" 1-8 (80-87), then "b)" 9-33

Coda 112-124 ("a)" with cadential ending.

124 measures

6- *Menuett*, 3/4, Allegro molto

C major

(88-111)

Ternary form

I (A) "a" canon a2 Violin I, Viola C major 1-16, at the octave, 1 quarter apart

"b" canon a2 Violin I, Violin II C major 17-32 at the octave, 1 quarter apart

"c" canon a2 Violin I, Violin II A minor 33-50 at the octave, 1 quarter apart

"a" canon a2 Violin I, Viola C major 51-62 at the octave (i.e. repetition of initial "a"), 1 quarter apart

II (**B**) TRIO "d" canon a2 Violin I, Violin II 63-72 C minor at the octave, 1 quarter apart

"e" canon a2 Violin I, Violin II 73-99 at the octave, 1 quarter apart – with development of "d"

"e" repetition and development 100-130 canon a2 Violin I, Violin II, at the octave 1 quarter apart
III (A) "a" 131-146 (repetition of "a") C major canon a2 Violin I, Viola at the octave 1 quarter apart
"b" 147-162 (repetition of "b") A minor canon a2 Violin I, Violin II at the octave 1 quartet apart
"c" 163-176 (repetition of "c") A minor canon a2 Violin I, Violin II at the octave 1 quarter apart
"a" 177-192 (repetition of "a") C major canon a2 Violin I, Viola at the octave 1 quarter apart

7- Gique, 6/8, ¹⁷Allegro¹⁸ C maior Rondo form¹⁹²⁰ A- 1-16 C major B- 17-46 C major – with developmental extension C- 47-66 A- 67-87 C major – with developmental extension and modulation to A minor D- 88-139 A minor – with developmental extension and modulation to C major A- 140-198 C major – with elements of B and C Coda 199-216 216 measures 1076 measures total *__* 10036 measures grand total

> Dr Avrohom Leichtling 2022

 $^{^{17}}$ Raff marks this movement 6/8 – 2/4 although there is no place within it that either duple rhythm, or quarter note substitution for the dotted quarter occurs.

¹⁸ The canonic writing in this movement Is entirely between the two violins at the octave, two dotted quarters (i.e. effectively one measure) apart..

¹⁹ The structural analysis here assumes the previous two footnotes (17, 18).

²⁰ Raff's use of the Rondo (A-B-A-C-A-B-A) is a typically original adaptation. In the broadest sense, a rondo is a specific kind of ternary form which includes A-B-A, a central divergent episode, and a restatement of the original A-B-A. As in other, similar movements Raff does not necessarily follow this formula exactly, but rather more in principle.