Of Gods and Monsters: Signification in Franz Waxman's film score Bride of Frankenstein

Universal's horror classic Bride of Frankenstein (1935) directed by James Whale is iconic not just because of its enduring images and acting, but also because of the high quality of its score by Franz Waxman. At a time when the cinema was still experimenting with the balance of dialogue, sound effects, and scoring on the sound track, and often relied upon the use of pre-existing music, Waxman's large-scale through-composed score underpins the action with masterly control and effect. It was the longest original score for a Universal horror film to be composed up to that time. His ambitious contribution is regularly referred to in surveys of early film music as "important" for the horror genre, for his own career, and for the emergent Hollywood symphonic score, yet given this recognition, it is surprising how little sustained scrutiny the music has received from scholars.

In this essay I propose to examine Waxman's score more closely than in previous studies, seeking to explain many of the references within the framework of topic theory. This approach has its origins in the analysis of eighteenth-century music, but is increasingly being applied to a variety of music written since that time. It seems particularly appropriate to film scores, where the signification heralded in the music is confirmed (or sometimes deliberately denied) by the action on the screen. In a horror film, this signification operates in many ways. At a basic level, the music reflects the mood or creates it and sometimes particular happenings that are depicted. It can also signal the presence (or imminent arrival) of a particular character or idea through the use of recurring motifs. Yet more importantly, particularly for the horror genre, specific musical devices are deployed to arouse feelings of fear and terror in audiences. In the latter case, the techniques involved differ little from those drawn upon in operas of the seventeenth and eighteenth centuries, and this tradition does not appear to have been much acknowledged in the literature on music for horror films.

It should come as no surprise to us that the horror genre was an important part of the earliest film history. The Devil himself is the subject of Le Manoir du Diable (George Méliés, 1896), and characters like Dr Jekyll, The Golem, the Frankenstein monster and Dracula appear prominently in the silent classics of the early twentieth century.[1] The tradition of shadow plays and lantern shows was already well established before that time, and the experience of viewing disembodied moving images in a darkened room has always had the potential for frightening audiences.[2] But our fascination with horror as a source of communal entertainment goes back much earlier. The supernatural has been an important component of opera since it first began. Scenes involving gods, monsters, oracles, and magic were a staple in serious operas of the seventeenth and eighteenth centuries, and they provided composers with the opportunity to develop special musical effects. This was not just for pictorialism though, as composers deliberately set out to generate feelings of awe and horror in their audiences. It was done by introducing discontinuous musical elements such as a slow tempo, flat minor keys, tonal uncertainty, unusual harmonies (especially chromatic chords), fragmented or wide-leaping melodic lines, insistent repeated notes, tremolando, syncopated and dotted rhythms, sudden pauses or contrasts in texture or dynamics, and dark timbres with unusual instrumentation, especially trombones.[3] These are the characteristics of ombra, a term introduced by Hermann Abert in 1908

to describe the ghost scenes in operas by influential eighteenth-century Italian composer Niccoló Jommelli.[4] Such characteristics can be found in operas on supernatural subjects, beginning with Monteverdi and Cavalli, including Purcell, Handel, Hasse and Gluck, and reaching a peak in Mozart's Don Giovanni, where the statue of the murdered Commendatore bursts in and drags the unrepentant Don off to hell, accompanied by some of Mozart's most awe-inspiring music. Closely allied to ombra is a more agitated style, usually referred to as Sturm und Drang, involving a much faster tempo, rapid scale passages (often on strings), driving rhythmic figurations, strong accents, full textures, and robust instrumentation including prominent brass and timpani. Storm scenes in operas of the 17th and 18th centuries are usually instigated by irate deities, so were regarded as supernatural events, but similar music was used for other frightening scenarios such as pursuit (especially by demons or furies), madness, and rage. The Sturm und Drang, label is, however, misleading, since the musical style predates the period associated with German literature in the late eighteenth century by quite some time. I have therefore coined the term tempesta for all manifestations of this more violent kind of music, because of its 'stormy' origins, and also to provide a suitable counterpart to ombra.[5]

Music of this type was more than merely representational. In combination with spectacular scenery and stage effects, it evidently had a profound effect on audiences. The relationship between music and emotional response is a complex one, but David Huron's recent psychomusicological study has shown that the reactions associated with what he terms 'awe' and 'frisson' derive from innate 'surprise' responses, 'awe' from the 'freeze' response in the face of unexpected danger, and 'frisson' from the more aggressive 'fight' reaction.[6] These terms map directly onto ombra and tempesta and it is possible to equate musical devices with these physical responses. For example, repeated dotted or syncopated notes relate to irregular heartbeats, and pauses reflect the suspension of activity at the moment of shock. In the mid-eighteenth century, awe and terror were recognised as sources of the sublime, notably by Edmund Burke, so ombra and tempesta need to be regarded as musical manifestations of this phenomenon.[7] They allowed composers to heighten the drama, and before long, we find references to these styles in sacred music (particularly depictions of portentous biblical events in oratorios) and even as topical allusions in instrumental music. For instance, ombra sometimes appears as a powerful opening gesture in slow introductions to symphonies, and tempesta is ubiquitous in allegro movements, especially in development sections. In these cases there is no direct supernatural reference, but the technique is employed for rhetorical and emotional effect.

Ombra and tempesta are two of around fifty topics that have been identified as present in instrumental music from the eighteenth century onwards, including stile galant, pastoral, hunt or military, learned style, sensibility, brilliant style, and an array of references to marches, dances and national characteristics.[8] Drawing on this musical vocabulary for music to accompany silent movies was an obvious step to make, and using ideas from supernatural operas for horror films a logical progression. So it was Weber's music for the Wolf's Glen Scene in Der Freischütz that was chosen to accompany the first public screening of J. Searle Dawley's silent short classic Frankenstein in 1910.[9] Another German Romantic opera, Marschner's Der Vampyr (1828), was the source for extracts used at the premiere of Nosferatu, eine Symphonie des Grauens (F.W. Murnau, 1922).[10] In both these cases the music is characterised by an array of unsettling sounds, and similar examples can be found among other German composers in the generation before Wagner, such as E. T. A. Hoffmann and Spohr.[11]

The proliferation of films in the horror genre in the early 1930s coincided with the introduction of orchestral music on the sound track, and to begin with classical sources were plundered, partly for their association with supernatural subjects, but chiefly because of their inherent ability to disturb the listener. The opening of Liszt's Sonata in B minor and the main theme of Tchaikovsky's Swan Lake feature prominently, as does the toccata from Bach's Toccata and Fugue in D minor (see Table 1 below).[12] All are in minor keys and contain various other unsettling characteristics. The score for Tod Browning's Dracula (1931) includes a concert hall sequence where music from Wagner's Der Meistersinger overture and Schubert's Unfinished Symphony are synchronised with the action, as well as a main title based on the Swan Lake theme.[13] Fragments of thematic material from pieces like these were often recalled at key moments on the screen. For instance, in The Black Cat (1934), the opening idea of Liszt's sonata recurs each time the mysterious character Poelzig appears.[14] This idea of thematic reminiscence, or Erinnerung, also derives from early Romantic opera, where themes or motifs served to remind the audience of characters and even abstract ideas whenever they reappeared subsequently, perhaps at a subliminal level. Both Spohr and Weber experimented with the technique, not in the complex manner that Wagner was later to develop with his leitmotiv, but certainly in a way that more closely resembles the practice in early sound films.[15]

As the studios began to recognise the importance of using original music, they began devoting more financial resources to the task, employing composers and arrangers, rather than relying on pre-existing music, and enlarging orchestras.[16] Table 1 summarises both the classical and contemporary composers that featured in horror movies of the early 1930s:

Table 1. Composers of music used in horror movies of the early 1930s

[Insert Table 1 here]

This list is by no means comprehensive, and in some cases music was only used for main and end titles, but it demonstrates the recurrence of the same classical composers (Bach, Liszt, Tchaikovsky etc.), and the handful of modern composers working in Hollywood at the time. The names of Karl Hajos, David Mendoza, Heinz Roemheld, Bernhard Kaun, David Broekman, Charles Dunworth, Milan Roder and Franz Waxman feature most prominently, so they were clearly in demand. The table also confirms the pre-eminent role played by Universal Studios both in the development of the horror film genre and in the increasing practice of dramatic underscoring.

In setting about writing a score for a horror movie, Waxman was able to draw on all the musical characteristics traditionally associated with the supernatural, including more recent developments such as the use of whole-tone and other tonalities outside the traditional major/minor axis. As a German-Jewish emigré, he had received his musical training at the Dresden and Berlin Conservatoires, and was therefore steeped in the German late-Romantic idiom.[17] He was fascinated by developments in early German cinema, and he would have been familiar with the cue books for silent film – the so-called Kinothek – which included numerous examples of music suitable for accompanying scenes of awe and terror.[18] Following the traditions of music in popular stage melodrama, these examples provided a huge array of 'mood music', including titles like 'Mysterious Music', 'Angel and Demon Music' etc.[19] One such cue, entitled 'Grand Appassionato' was used by Becce for the end title of

Frankenstein (1931) directed by James Whale.[20] These passages were usually short, and more often than not appeared only sporadically among lengthy amounts of dialogue—and silence—but they had the effect of heightening moments of dramatic tension. Waxman gained valuable experience as a film composer arranging songs for The Blue Angel (1930) and then writing a score for Liliom (1933), working with Erich Pommer, whom he accompanied to Hollywood in 1934. James Whale was an admirer of Liliom and this led to him employing Waxman on Bride of Frankenstein.

The final version of Waxman's score was different from what he originally composed. Following the preview in April 1935, the film underwent some re-editing, which involved a few scenes being shortened or removed altogether, and one extra one inserted (for which no new music was added). Also the original tragic ending was altered, so that Dr Frankenstein and Elizabeth survive the destruction of the laboratory. The effect of these changes on the score was that around fifteen minutes of music was lost, with 9 of Waxman's 17 main sequences being shortened.[21] This still leaves a substantial amount of music which is heard for a very sizeable proportion of the film in comparison to most other movies of the period.

Although most of the original full score is now lost, Waxman kept several sequences and his sketches have survived, along with the cue sheet which is used as the basis for Table 2.[22] Timings from one DVD version and some brief descriptive notes have been added for reference purposes with the numbers followed by brackets referring to the three main motifs that are identified and discussed below.[23]

Table 2. Bride of Frankenstein Cue Sheet (with timings and notes)

[Insert Table 2 here]

Waxman presents us with the three main musical ideas in the Main Title. The first is the 'Monster' motif, which is fixed in the listener's memory through the use of unstable tonality, imaginative orchestral colouring, a strong rhythmic figure and harsh dissonance.[24] It is first heard in the film itself in Cue 3, when the Monster first appears and starts attacking people. In the Main Title there is a brief introduction consisting of a trilling string crescendo with harp glissandi, built on rising chord clusters. The motif itself is characterised by a repeated triplet chord and a higher accented held dissonance (with jarring high trumpet flutter-tongueing), before falling again.[25]

Example 1. 'Monster' motif

[Insert Ex. 1 here]

The dynamic markings in Waxman's original sketch indicate fff at this point, followed by a further crescendo to an implausible fffffff when the idea is repeated. Up to this point all the pitches derive from the whole-tone scale on C, but the climactic chord itself switches to the one on C#. The association between whole-tone scales and the supernatural is one that was well established by the 1930s, but was not part of the language of ombra in the eighteenth century. Whole-tone scales were often used in supernatural contexts in Russian operas of the nineteenth century, including Glinka's Ruslan and Ludmila, Dargomïzhsky's The Stone Guest, and several of Rimsky-Korsakov's operas.[26] The lack of a clear tonal centre and the opportunity for tone clusters serve to disrupt conventional tonality and harmony. The idea of a whole-tone fanfare-like motif may have been suggested by the magician's spell in Paul Dukas's

tone poem *L'Apprenti Sorcier* (1897). There is also a passing resemblance to the 'Werewolf' motif which recurs frequently in Werewolf of London (1935), and which Waxman may have seen when he was commissioned to compose the music, with a view to picking up some ideas.[27] The 'Monster' motif is given two further statements, but more subdued, with low, rasping brass, two descending harp glissandi and strings playing sul ponticello, lending an eerie, scratchy quality to the tone. The music then fades, so that there is no proper resolution, and no hint of a tonal centre. This lack of resolution is a recurring feature throughout the score, and while it may be a device to help the scenes to flow from one to the next, it also serves to build tension for the listener, denying any sense of arrival.

The second motif is the 'Pretorius' theme, and is associated with the malevolent character who has a controlling influence over Dr Frankenstein, forcing him to resume his experiments against his better judgment. The motif's appearance in the Main Title was an afterthought, as originally the fire music from Cue 20 was used, but this passage from Cue 6 is far more effective, because the music is stronger and allows the composer to present the three principal motifs at the outset. The rhythm of the first four notes of the motif may even derive from the four syllables of Pretorius's name.[28]

Example 2. 'Pretorius' motif

[Insert Ex. 2 here]

Tremolando strings feature prominently again, but this time the theme is in the bass. It is an angular line with a jerky rhythm made up of syncopations and triplets, and begins with a descending F minor broken chord (flat minor keys have always been particularly associated with ombra).[29] The line then twists upwards, coming to rest on a tonally ambiguous half-dimished seventh, before the whole passage is then repeated a minor third higher. The effect is sinister rather than hair-raising. Following this, the 'Monster' motif returns, reaching a climax with a loud cymbal crash at the precise moment that the credit for director James Whale appears on the screen! If confirmation were needed that Waxman's tongue is in his cheek a lot of the time, then this is it.

The third motif has been called the 'Bride' motif, although Waxman uses the label 'Female monster music' when it first appears in the film in Cue 10.[30]

Example 3 'Bride' motif

[Insert Ex. 3 here]

It is clearly intended to be a gendered reference, with its rising octave portamento on the dominant followed by a semitone descent to the sharpened subdominant, rather in the manner of an eighteenth-century seufzer or 'sigh' motif, but the harmonic resolution is to a chord of F major with a distinctly twentieth-century sounding added 6th. The swooping string sound and twinkling celeste effects contribute to an altogether more luxuriant and romantic feel, which counterbalances the other motifs nicely, while retaining a slightly macabre quality, mainly due to the use of a sharpened subdominant.[31] It has been suggested that an Ondes Martenot was originally planned by Waxman, and it is used here effectively in the modern reorchestration.[32] The rising octave idea was shortly to become a prominent feature in

one of Hollywood's biggest romantic melodies, Tara's theme in Max Steiner's score for Gone with the Wind (1939).

The Main Title, then, is very much a compilation of themes from the score cobbled together to produce an overture, a practice that was common enough both in Hollywood and in nineteenth-century opera, although Waxman makes little attempt at linking the different sections together in any subtle way, fading instead from one entry to the next.[33] His ingenuity is much more evident in the various transformations that his three main ideas undergo throughout the rest of the score. Their appearances have been summarised in Table 2, and some of these will be given more detailed consideration below.

The first appearance of the Monster is an important scene, as it establishes the fact that he has survived and is carrying out further murderous mayhem. The scene features Hans and his wife who are the aggrieved parents of Maria, the little girl accidentally drowned by the Monster in Frankenstein. The cue is introduced by a plaintive oboe solo, followed by probably the commonest trope to indicate approaching menace, namely the ascending chromatic pizzicato bass line played without accompaniment. The 'Monster' motif first appears softly in low brass instruments, suggesting hidden terror, then the tempo accelerates towards the attack on the man, with two loud statements of the idea. The tension builds once more leading to the attack on the woman, with the motif this time played on the clarinet. Later, when the Monster is pursued and captured (Cues 13 and 14), the motif is firstly incorporated with a fast string ostinato for the chase, and then for the 'crucifixion' it is treated antiphonally, high woodwind trills suggesting the mockery of the crowd in contrast to the low brass for the rope-bound Monster.

Although the character of Pretorius is undoubtedly sinister, as his motif is intended to convey, he also displays humorous tendencies. There is rather a camp aspect to his exaggeratedly formal language, and he is certainly fond of a drink or two. His first appearance in Cue 6 has distinctly comic overtones, not least because his desperate bangings on the door of Dr Frankenstein's castle are answered by the eccentric housekeeper Minnie, who is unable to remember his name, prompting several repetitions of the 'Pretorius' motif.[34] It appears again in Cue 7, the first time developed with solo clarinet and muted trumpet statements over a pizzicato bass line, and then the original version is reiterated as Pretorius brings in his mysterious black coffin box.[35] Thankfully Waxman does not overplay this motif, and the ambiguities of Pretorius's character are signalled by other musical means, as we shall see.

The 'Bride' motif exists in two different versions. The one with the rising octave used in the Main Title is associated with the Bride herself, and appears at Cue 10 when Pretorius first suggests the idea of creating a woman. Feminine warmth is suggested by the subdued theatre organ vibrato, strings and harp, but resolution is once more denied as the extract fades before the last chord of the cadence.[36] Later it is used extensively in the creation scene (see below). The variant version is for the other 'bride' in this story, Dr Frankenstein's new wife, Elizabeth. Here the opening leap is inverted and reduced to a falling fifth from dominant to tonic, then rising to the flatted supertonic. It does not appear in the Main Title, but is first heard as a distant oboe solo in Cue 5, where Elizabeth appears to be hallucinating. It returns to accompany references to the hostage Elizabeth in Cue 28 and for her entrance in Cue 31. In both versions, the sense of strangeness is provided by the use of the only two pitches outside the diatonic major/minor scales, the sharpened subdominant and the flattened supertonic, so there is a hint of ombra even here.

The climax of the film – and of Waxman's score – is the scene where the Monster's bride is created. The three main motifs are used in combination in a continuous sequence lasting over sixteen minutes (highly unusual for the time), covering Cues 27–32. The material is summarised in Table 3.

Table 3. The Creation of the Bride

[Insert Table 3 here]

One clever effect here is to use a single repeated note on timpani, irregularly at first to represent the faulty heart, and then regularly for the fresh one. It functions both to represent the equipment that monitors the pulse, and simultaneously forms an integral part of the scoring, an important component in the increasing tension.[37] It also functions as a tonic pedal which finally establishes a tonal centre of F for the 'Monster' motif, bringing it in line with the other motifs for Pretorius (F minor) and the Bride (F major). In Cue 28, all three motifs are used in rapid succession, with Elizabeth's variant appearing twice, first when she is referred to by Dr Frankenstein, and then when she speaks to him from the cave via Pretorius's 'electrical machine'. In clear contrast, the original 'Bride' motif appears at Cue 30 as the bandaged (but still lifeless) Bride is revealed, using the same vibrato organ effect heard at Cue 10, closely followed by a gentle string version. The moment when she is brought to life by a thunderbolt is signified in two ways, with a triumphant statement of her motif, and a rapid two-note pattern repeated on timpani to suggest the reinvigorated heart.[38] The real climax, though, is reserved for her first appearance without the bandages, a legendary Hollywood image, as Pretorius announces proudly "The Bride of Frankenstein", and her motif is played by full orchestra with an accompaniment of orchestral chimes to evoke wedding bells.[39]

Both the 'Monster' and 'Bride' motifs continue to be referenced in the final denouement, with the usual minor third of the 'Monster' motif replaced by a tritone at the moment he pulls the lever that destroys the castle. Dr Frankenstein and Elizabeth escape and are reunited, to the strains of the original version of the 'Bride' motif rather than Elizabeth's variant.[40] At last resolution is achieved with a perfect cadence in F major, but immediately the same theme is repeated for the End Cast, and it is once more unresolved, closing with an ascending chromatic figure that fades out, a quite remarkable way to end the movie.

As one might expect in a horror film score, ombra is the principal topic in play, although the musical language has moved on since the eighteenth century and includes relatively new features such as atonality, whole-tone scales, unresolved cadences, extreme dissonance, electric organs and flutter-tonguing on trumpets. Tempesta also features prominently, particularly in the chase music (Cue 13), fire (Cue 20) and storm (Cue 31). Versions of the fire music recur at other places associated with unpleasant behaviour either by the monster or his tormentors, such as the killing of Hans under the windmill; when the villagers peer into the jail cell and mock him; when he presents his demands for a mate to Frankenstein; and even when he is peremptorily rejected by his intended bride. All are characterised by fast, unsettling music in the tempesta style, projecting a metaphorical storm reference that conveys and even elicits an impassioned response. The impact of these references would be lost without musical contrasts, however, and Waxman was well aware of this. Certainly nothing could be stylistically further removed from ombra than the graceful minuet in the galant manner used in the prologue to accompany the drawing-

room scene, with Mary Shelley explaining to her companions, husband Percy and Lord Byron, that there is a sequel to her original tale (Cue 2). There is a brief glimpse of heaven in the celeste solo that follows the line "She is an angel", then following the flashback sequence (incorporating images from the original Frankenstein film), the minuet is reprised, but even this is left unresolved, ending with a few pizzicatos and an atonal tremolando chord. Cue 11 presents a rural idyll (complete with bleating lambs and sheepbells), set to a Debussy-style flute melody accompanied by harp arpeggios. There is a brief low brass dissonance when the Monster catches his own reflection in the water, but the peace is really shattered when a shepherdess catches sight of him, and is promptly murdered by the Monster.

There is more than a hint of parody in both the minuet and pastorale music, and indeed elsewhere in the score, such as the Viennese waltz for the feast scene in the vault (Cue 22), or the sombre funeral march in C minor, with sighing figures and dotted rhythms (Cue 4). There is also a faster 'heroic' march in Cues 12 and 14, with brass fanfares and strong marching rhythms (a slower version of the same theme is used for the dungeon scene in Cue 14). Fanfares also accompany the pursuing huntsman in Cue 11 and the rider in Cue 3 ('hunt' topic) and suggest a kind of comic majesty for the miniature Queen and King in the 'Bottle sequence' (Cue 8).[41] In some places there are quotations of pre-existing music. In Cue 9 the Ballerina dances in her bottle to Mendelssohn's 'Spring Song' explicity mentioned by Pretorius in his dialogue, played on the oboe but accompanied by strange harp chords, and then a tuba is comically added to the mix for the Mermaid. Particularly effective is the way in which Schubert's 'Ave Maria' is used for the Monster's first encounter with the blind hermit.[42] To begin with it is heard as source music as the hermit is seen playing the melody on his violin (Cues 16 and 17). Then in Cue 18, the theme continues as scoring, played on an electric organ that gradually fades in with the theme, followed by a violin version to accompany the old man's prayer.[43] One final reference is a rather poignant one, and it is the jaunty, folk-like violin melody used in Cues 19 and 20 (briefly anticipated at the end of Cue 9) to reflect the innocence of the children playing outside the hermit's hut.

Of all the topical references in Bride of Frankenstein, then, those associated with fear and terror fittingly form the musical backbone, featuring in all the principal motifs and elsewhere in the score. The musical characteristics associated with ombra and tempesta are everywhere to be found, subtly re-interpreted to enhance their effectiveness within a post-Romantic sound world. A destabilising factor throughout the film is the lack of resolution in so many cases.[44] The constant denial of tonal stability or even of recognisable cadences leaves the listener wondering what will happen next, creating a sense of musical suspense that complements the events depicted on the screen. The most unsettling effects are all in line with what Burke would have recognised in the eighteenth century as the 'Sublime of Terror', even though a parodistic element is never far away. Other contrasting musical ideas are brought into play, drawing on traditions associated not only with eighteenth-century instrumental topics, but also music cues for silent cinema (which themselves derive from theatre). The transmission of this tradition is therefore a complex one, relying on well-established conventions as well as the direct influence of individual pieces of classical music and of cinematic mood-cues. Waxman skilfully navigates this topical landscape and adapts it to the new techniques required for film, such as synchronisation and re-editing. This is why his position is so important in the establishment of the musical language of horror movies, and also in related genres

that required the building of suspense.[45] The images and characters of Bride of Frankenstein have undoubtedly achieved a legendary status in cinema history, and Waxman's score deserves its similarly eminent position.

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Suite: 'The Bride of Frankenstein' in Sunset Boulevard: The Classic Film Scores of Franz Waxman, National Philharmonic Orchestra, Charles Gerhardt, RCA Victor/BMG Music, 1974, GD80708.

Notes

[1] See Philip Hayward ed., Terror Tracks: Music, Sound and Horror Cinema (London: Equinox, 2009) pp 4–5. Dr Jekyll and Mr Hyde was especially popular, with films by William Selig (1907), Lucius Henderson (1912), John S. Robertson (1920) and J. Charles Haydon (1920). Paul Wegener directed three versions dealing with the Golem legend, The Golem (1915, lost), Die Golem und die Tänzerin (1917), and The Golem: How He Came into the World (1920). Frankenstein's Monster first appears in Frankenstein (J. Searle Dawley, 1910), and again in Il Mostro di Frankenstein (Eugenio Testa, 1921), and Dracula's debut was in Drakula Halála (Károly Lajthay, 1921). One other notable silent movie in the horror genre was Robert Wiene's Das Kabinett des Doktor Caligari (1919).

[2] "The pure cinema must have had a ghostly effect like that of the shadow play – shadows and ghosts have always been associated." Theodor Adorno & Hanns Eisler, Composing for the films (New York: Oxford University Press, 1947), p 75.

[3] Compare this list of characteristics with Donnelly's set of features associated with horror film music in Kevin J. Donnelly, The Spectre of Sound: Music in Film and Television (London: BFI Publishing, 2005), pp 90–92. He specifically mentions the string tremolo sul ponticello effect in the opening of Bride of Frankenstein. See also Janet K. Halfyard, 'Mischief Afoot: Supernatural Horror-comedies and the Diabolus in musica' in Neil Lerner ed., Music in the Horror Film: Listening to Fear (New York: Routledge, 2010), p. 21.

[4] Hermann Abert, Niccolò Jommelli als Opernkomponist (Halle: M. Niemeyer, 1908). Ombra in Italian means 'shadow', but is also used for 'shade' as in a spirirt of the dead. For a detailed study of ombra, see Clive McClelland, Ombra: Supernatural Music in the Eighteenth Century (Lanham: Lexington Books, 2012). William H. Rosar has observed a parallel between the ombra tradition and "villain music" of the silent film era that eventually formed the basis of "monster music" in the scoring practices of horror and science fiction films; see 'The Penumbra of Wagner's Ombra in Two Science Fiction Films from 1951: The Thing from Another World and The Day the Earth Stood Still. In Wagner & Cinema, edited by Jeongwon Joe & Sander L. Gilman. Bloomington: Indiana University Press, 152-164.

[5] The need for this new label and the relationship between the two styles are examined in Clive McClelland, 'Ombra and Tempesta' in Danuta Mirka ed., The Oxford Handbook of Topic Theory (Oxford: Oxford University Press, 2014), pp 279–300.

[6] David Huron, Sweet Anticipation: Music and the Psychology of Expectation (Cambridge, Ma: MIT Press, 2006, pp 35–39).

[7] See McClelland, Ombra, 10–21. Burke's ideas on the 'Sublime of Terror' were expressed in his highly influential A Philosophical Enquiry into the Origins of our Ideas of the Sublime and the Beautiful (London: J. Dodsley, 1757). Importantly they pre-date the German literary Sturm und Drang, further undermining the association of this label with music.

[8] The idea of musical topics was first proposed in Leonard G. Ratner, Classic Music: Expression, Form and Style (New York: Schirmer, 1980). For a more detailed consideration, see Mirka ed., Topic Theory.

[9] See Donnelly p. 95. Interestingly, Weber broke new ground by employing projection effects in his opera Der Freischütz (1821), in the newly rebuilt Neue Schauspielhaus in Berlin. See Anthony Newcomb, 'New light(s) on Weber's Wolf's Glen Scene'. in Thomas Bauman and Marita P. McClymonds eds., Opera and the Enlightenment (Cambridge: Cambridge University Press, 1995), pp 61–88 and E. Douglas Bomberger, 'The Neues Schauspielhaus in Berlin and the Premiere of Carl Maria von Weber's Der Freischütz', in Mark A. Radice ed., Opera in Context (Portland: Amadeus Press, 1998), pp147–169.

[10] Donnelly, Spectre, p 96. Another supernatural opera used in this way was Gounod's Faust in The Phantom of the Opera (Rupert Julian, 1925).

[11] For a table of German Romantic operas with supernatural scenes 1811–34, see McClelland, Ombra, p 216.

[12] For more on the associations of the organ with horror, especially the Bach Toccata, see Julie Brown, 'Carnival of Souls and the Organs of Horror' in Lerner ed. Music in the Horror Film pp 1–20.

[13] See William Rosar, 'Music for the Monsters: Universal Picture's Horror Film Scores of the Thirties'. In Quarterly Journal of the Library of Congress, Fall 1983, 390–421, pp 393–4.

[14] All the references to classical sources in the film are given in Rosar, 'Music for the Monsters', pp 403–4. The same motif was used for a spitting cat in The Werewolf of London (1935).

[15] The term leitmotif is often misleadingly applied to this widespread cinematic practice. The problem is discussed in Stephen C. Meyer, 'Leitmotif: On the Application of a Word to Film Music' in Journal of Film Music Vol. 5 (2012), pp 101–108. Franklin has suggested that Waxman's approach has

less to do with Wagner and more with Verdi (the 'curse' motif in Rigoletto), or Weber (Samiel's motif in Der Freischütz). See Peter Franklin, Seeing Through Music: Gender and Modernism in Classic Hollywood Film Scores (Oxford: Oxford University Press, 2011), pp 70–71.

[16] Clifford Vaughan orchestrated Waxman's score from the composer's sketches which contain orchestral annotations. . When Waxman left Universal for MGM in 1936, he took Vaughan with him.

[17] For more on Waxman's musical background and stylistic influences, see William Darby and Jack du Bois, American Film Music: Major Composers,Techniques, Trends 1915–1990 (Jefferson NC: McFarland, 1990), pp 116–18 and David Neumeyer and Nathan Platte, Franz Waxman's 'Rebecca': A Film Score Guide (Lanham: Scarecrow Press, 2012), pp 1–34. A more detailed study is Rachel Segal, Franz Waxman: The Composer As Auteur in Golden Era Hollywood (PhD diss., U. of Newcastle, 2010).

[18] The two principal sources for these cues were Erno Rapee, Encyclopedia of Picture Music (1925) and Hans Erdmann, Giuseppe Becce and Ludwig Brav, Allgemeines Handbuch der Film-Musik (1927). See also William Rosar, 'Knowledge Organisation in Film Music and its Theatrical Origins: Recapitulation and Coda', in Journal of Film Music Vol. 5, 1-2 (2012), pp 207–212, and Irene Comisso, 'Theory and Practice in Erdmann/Becce/Brav's Allgemeines Handbuch der Film-Musik (1927)', in Journal of Film Music Vol. 5, 1-2 (2012), pp 93–100.

[19] Rosar, 'Knowledge Organisation in Film Music', p. 209. See also Tobias Plebuch, 'Mysteriosos Demystified: Topical Strategies Within and Beyond the Silent Cinema', in Journal of Film Music Vol. 5, 1-2 (2012), pp 77–92.

[20] See Rosar, 'Music for the Monsters', p. 398.

[21] Richard H. Bush, CD booklet accompanying The Bride of Frankenstein, Westminster Philharmonic Orchestra, Kenneth Alwyn, Silver Screen Records, 2003, FILMCD726.

[22] The sketches, along with a conductor part and portions of Vaughan's full score are preserved in the Franz Waxman Papers at the Special Collections Research Center, Syracuse University, NY. The composer's son John Waxman commissioned a new orchestration but it is not freely available. I am grateful to Bill Rosar for providing copies of Waxman's sketches supplied to him by John Waxman, on which the following examples are based.

[23] I have used the DVD Bride of Frankenstein, dir. James Whale, (Universal, 1935), 903 220 9. Timings of other recordings may vary depending on running speed.

[24] Franklin observes that "both harmony and timbre echo the licentious experimental sound-worlds of Schreker and Skryabin ca. 1912", See Franklin, p 71.

[25] Franklin compares this to an inverted version of the motif that opens Beethoven's Symphony No. 5, ibid. p 72. The dissonance on the fourth note "suggests the monster's growl" according to Rosar, 'Music for the Monsters', p 409. This idea is expanded upon in Michael Long, Beautiful Monsters: Imagining the Classic in Musical Media (Berkeley: University of California Press, 2008), pp 187-9.

[26] See Donald Street, 'The Modes of Limited Transposition' in The Musical Times, Vol. 117, No. 1604, Oct. 1976, pp 819–823. For Waxman's use of whole-tone scales in Bride of Frankenstein see Rosar, 'Music for the Monsters' p 409, Wierzbicki, p 112 and Franklin, p.71.

[27] Rosar, personal communication. He suggests that the "Werewolf" theme is relevant also because it is the first time a monster had a theme in the Laemmle horror cycle at Universal.

[28] See Long pp 190-91. He also points out a resemblance to the scoring of Dukas's L'Apprenti Sorcier. Waxman apparently specified the addition of a bassoon and bass clarinet for the motif's use in the title sequence. That both pieces are in F minor adds to the plausibility of this argument.

[29] There is strong evidence that flat minor keys were consistently used for supernatural scenes in eighteenth-century opera, establishing a tradition that persisted thereafter. Before equal temperament was established, the more remote keys sounded progressively out of tune, and in flat keys, open strings were less available, thus darkening the timbre. See McClelland, Ombra, pp 27–31.

[30] See Rosar, 'Music for the Monsters' p 409 and Wierzbicki, p 108. The model for this may be the music Huppertz composed in Metropolis (Fritz Lang, 1927) for the machine woman (Long, p 194).

[31] Rosar describes the theme as "glamorous" (ibid.). A resemblance to the 'machine woman's music' from Huppertz's score for Metropolis (1927) has been noted, and this may well have been a direct influence (Long, p 194). The version of the theme used in the laboratory scene, where the robot becomes animated, has an upward leap of a major sixth (often associated with heroines in early Romantic opera) as well as a slightly uncanny flattened submediant.

[32] Bush, CD booklet. A theremin was also considered, but Waxman 'failed to procure' one (Long, p 158).

[33] This is very much in keeping with the cinematic custom of using 'track' or 'library music' (pre-existing recorded music dropped into the film wherever needed). Indeed Waxman himself re-used

material from Bride of Frankenstein in his next horror film for Universal, The Invisible Ray, and Bride music was also recycled in the trailer for Son of Frankenstein. It seems to have become standard practice at Universal to encourage 'in-house' recycling of material, presumably to save expense (Rosar, personal communication).

[34] She has already appeared in the film, giving a characteristically hysterical response on encountering the Monster immediately following his first attacks.

[35] Pretorius proposes his toast to "a new world of gods and monsters", from which the title of Bill Condon's 1998 film (and this paper) derives.

[36] The sound of an organ with vibrato is a reminder – particularly in American culture – of a chapel of rest, and suggests both death and kitsch.

[37] For the significance of repeated notes in evoking fear, especially in relation to heartbeats and footsteps, see McClelland, Ombra, pp 64–69.

[38] A similarity to the opening of Richard Strauss's Also Sprach Zarathustra (1896) may not be entirely coincidental. See Long p 195.

[39] Various kinds of bells are used throughout the film on the sound track, including clock chimes and a funeral toll. See Wierzbicki, p 107.

[40] Apparently Whale had originally intended to end the music with a "big dissonant chord", so the music heard after the explosion is an afterthought reflecting the changed ending in which Henry and Elizabeth escape at the Monster's insistence. See Rosar, "Music for the Monsters," ibid., p. 411.

[41] The Archbishop naturally has an organ accompaniment, but the Devil is given jaunty high piccolo music, mocking his powerless captive state.

[42] This is incorrectly identified as Gounod's 'Ave Maria' in Wierzbicki, p 112.

[43] Holy hermits are a stock figure in early German Romantic opera e.g. Heilmann in Hoffmann's Undine (1816), and the Hermit in Weber's Der Freischütz (1819).

[44] Whale is supposed to have instructed Waxman that the only 'resolution' was to be in the final destruction scene of the film (Long, p 280 n 81).

[45] Parts of this score were recycled for the Flash Gordon and Buck Rogers movies that appeared between 1936 and 1940. For details, see Richard H. Bush, 'The Music of Flash Gordon and Buck Rogers' in Clifford McCarty ed. Film Music 1. (New York: Garland, 1989). Some of the music also appears in The Phantom Creeps (1939), see Wierzbicki p 116 n xviii. Other passages frequently appear in serials, Westerns and 'B' movies of the era.