



The knowledge organisation of sub-subgenres: the curious case of the collaborative works of Gilbert and Sullivan

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Abstract

Introduction. This paper explores the knowledge organisation of sub-subgenres and takes a micro-level approach to genre classification. The study uses a particular case study: the classification issues around the collaborative works of Gilbert and Sullivan.

Method. This paper uses literature analysis (musicological, theatrical and literary) and classification scheme analysis (informal domain classifications). It applies three classification theory ideas – characteristics of division, boundaries of classes and thesaural relationships – to the domain knowledge of Gilbert and Sullivan.

Analysis/results. Novel characteristics of division are found to be at play, for creator, theatre and producer. Furthermore, issues with the porous boundary of *Gilbert and Sullivan* as a sub-subgenre are modelled using a Venn diagram for characteristics of division. This model highlights the lack of consistent application of characteristics on one hand and differing ideas about the outer boundaries of this sub-subgenre on the other. A study of the hierarchical, equivalence and associative relationships furthers understanding of the classification issues, especially a complex merging of hierarchical and equivalence relationships in the term *Savoy opera*.

Conclusion. This study shows that knowledge organisation can be used to gain understanding of classifying Gilbert and Sullivan, and the value and novelty of studying sub-subgenre classification within knowledge organisation.

Introduction

In recent years, much attention has been paid within knowledge organisation to the classification of genres, especially within the arts. The IEKO encyclopaedia article by Rafferty (2021) and a series of articles by Hider (and various collaborators) on genre classification within different art forms (White and Hider, 2020; Hider and Spiller, 2020; Hider and Lee, 2023), are some examples of how recent knowledge organisation research has helped shape understanding about genre as a classificatory device within structures of cultural knowledge. However, these studies typically consider the genre and subgenre as their main focus. Yet, subgenres can themselves be categorised into sub-subgenres and sub-sub-subgenres (and so on). Examples might include plays (genre) being subdivided into Elizabethan plays (subgenre), and subdivided into Shakespearean plays (sub-subgenre) and even the categorisation of these plays into tragedies, comedies and histories (sub-sub-subgenre). Therefore, this paper makes a preliminary exploration into the lower levels of genre classification, looking at the classification of sub-subgenres and below. This research will help us to more fully understand how the knowledge contained within subgenres is organised and ask whether there are novel categorisation and ordering issues which emerge when contemplating these narrower and deeper levels within genre classifications.

In this introductory study, one particular case study of a sub-subgenre is used. The collaborative works by W. S. Gilbert (1836-1911) and Arthur Sullivan (1842-1900) are taken as a fascinating, rich and complex example of a sub-subgenre (or sub-sub-subgenre), through which to ask questions about micro-level genre classification. These works will be called by the collective title of *Gilbert and Sullivan* in this paper. While a perennial subject for many enthusiast writings (for example, Bradley, 1996; Hardwick, 1972), it could be argued that modern scholarly writings about Gilbert and Sullivan, especially those from musicological or literary disciplinary backgrounds, have only emerged into a coherent discourse in the last 10-15 years or so. Important examples include Williams' (2011) monograph about genre and parody, Taylor's musicological work on Sullivan (2009; 2018) including a chapter on the comic operas and the relationship between text and music, Kuykendall's (2013) analysis of Sullivan's recitatives, and perhaps the foundation of this scholarly discourse, Wren's (2001) analysis of Gilbert and Sullivan's works. Within all types of Gilbert and Sullivan literature, the classification of the genre of Gilbert and Sullivan's works has attracted much attention. Gilbert and Sullivan produced fourteen collaborative stage works (with thirteen extant). These are known by various generic labels, such as comic opera, light opera, operetta, opera and Savoy opera. These influential works have a varied generic pedigree stemming from different types of opera and English theatre traditions (Taylor, 2018), and they went on to have a significant influence on the amateur music-making scene (Bradley, 2005) as well as influencing the birth of other genres such as American music theatre (Knapp, 2011). Therefore, their combined importance and interesting generic ambiguity make these works a useful example for a case study in micro-genre classification.

Recent knowledge organisation work on artistic genres makes a useful starting point for a conceptual study of sub-subgenres within music. Rafferty's (2021) important encyclopaedia entry on genre from a knowledge organisation perspective acknowledges both the importance of subgenres and the lack of agreement on where the line is drawn between what constitutes a genre versus a subgenre. So, to contemplate sub-subgenres is to go further down an unstable hierarchical journey. Hider and Lee's (2023) analysis of characteristics of division across different types of music concludes that typically subgenres are differentiated from each other by two to three characteristics rather than just one. Furthermore, they (Hider and Lee, 2023) also discover that medium, form, rhythm and function are particularly prolific characteristics for separating out subgenres. While one potential example of a sub-subgenre (Gilbert and Sullivan) cannot be taken to be representative of all micro-level genre classifications, it would nevertheless be interesting to compare the findings about the sub-subgenre of Gilbert and Sullivan to these all-

music results about subgenres. Finally, Lee et al. (2020) analyse the treatment of opera subgenres in both music domain and bibliographic classifications. The findings (Lee et al., 2020) show that the music domain contains a very large quantity of opera subgenres and a lack of agreement in how this information is organised; conversely, not all bibliographic classification even have subgenres for operas, and those that do have relatively few of them (Lee et al., 2020). Lee et al.'s (2020) study presents a model of opera subgenres which looks at subgenre through the lens of three relationship types (hierarchical, associative and equivalence), which could be useful for looking at this Gilbert and Sullivan case study.

So, this paper asks the following research questions:

1. How can the classification of Gilbert and Sullivan's works be understood in knowledge organisation terms? How does thinking about these works through knowledge organisation help us to understand their classification issues?
2. What does contemplating the classification of Gilbert and Sullivan's works tell us about the classification of lower levels of genres such as sub-subgenres, and what ideas might be worthy of further investigation?

These questions will be answered using a variety of methods and sources. Discussions about the genre classification of Gilbert and Sullivan within scholarly works (from music and literature studies) will be used and analysed, though this will be selective and the focus will be on works which are pertinent to classification issues. In addition, the knowledge organisation of a few examples of scholarly and enthusiast sources will also be used as primary sources for classification analysis, such as the organisation within examples of Gilbert and Sullivan books and the broad structure of the arrangement of works in the *Gilbert and Sullivan archive* (2024). This is part of the methodological approach of analysing domain classifications and the organisation of domain knowledge, as espoused by Hjørland (for example, Hjørland 2017; Lee et al., 2019). The main methodology employed will see the application of different knowledge organisation concepts to the Gilbert and Sullivan sub-subgenre example. While models and figures of Gilbert and Sullivan sub-subgenre are presented, no attempt is made to model sub-subgenres in the abstract; it is unwise to generalise such a model from the one sub-subgenre example covered in this paper, though it is intended that this paper is the first step towards such a goal.

The paper starts by looking at how Gilbert and Sullivan's works fit within the genre organisation of the musical-theatrical domain. This leads to the second part of this paper, which is a knowledge organisation examination of the conceptualisation of Gilbert and Sullivan as its own sub-subgenre. Different classification aspects are considered, starting with the characteristics of division used to create such a sub-subgenre, especially the idea of creators, theatres and producers. This is followed by an exploration of the messy boundaries of Gilbert and Sullivan as a sub-subgenre, considering what is considered inside and outside such a group. Then, the sub-subgenre is examined in terms of its hierarchical, equivalence and associative relationships. This exploration of Gilbert and Sullivan as a case study of sub-subgenre classification offers knowledge organisation insights about a thorny part of musical-theatrical knowledge, and leads to some thought-provoking questions about the nature of sub-subgenres themselves.

Gilbert and Sullivan within musical-theatrical genre classification

Where to classify Gilbert and Sullivan's works and what to call them are important topics within musical-theatrical discourse. Generic categories commonly assigned to them in the musical/theatrical/literary discourse include *comic opera* (see, for example, Taylor, 2018), *English comic opera* (Williams, 2011), and *light opera* (particularly used by many amateur companies which choose to primarily perform Gilbert and Sullivan works, such as *Grosvenor Light Opera Company* (2024), and *Julian Light Opera Society* (2024) to name just a couple). Some authors directly address the genre classification labels. For example, Taylor (2018) explicitly tells

his readers that he is using ‘comic opera’ to refer to the works of Gilbert and Sullivan and the reasons for it, then builds some of his argument on the generic labels ascribed by the original creators. Kuykendall (2013) describes some of the terms which did not get taken up, such as ‘Comedy opera’, then goes on to suggest that ‘Savoy opera’ is the popular label – this term will be discussed in the next section. This generic-labelling complexity can also be seen indirectly in the quantity of generic labels used in writings about the works. For example, the *Grove music online* entry on Gilbert and Sullivan (Bradley, 2015) – interesting in itself for being an entry for a collaborative partnership – indirectly belies the genre classification richness by containing no fewer than four different generic labels in an entry of only 540-odd words, including wider subgenres, genres and categories which just cover Gilbert and Sullivan (comic operas, Savoy operas, operas and Gilbert and Sullivan).

The next question to consider is the creators’ generic view of their works. The original generic titles to the fourteen works vary, utilising Kuykendall’s (2013, p. 551) list of titles from the opening night programmes: some works have the generic category title of ‘opera’, others have ‘comic opera’, and there is one outlier with the generic title of ‘dramatic cantata’ (*Trial by jury*). Yet, there does not appear to be much obvious difference as to why some are assigned the label of ‘opera’ while others are designated as ‘comic opera’, despite all fourteen works fulfilling the generic attributes of comic opera (including dialogue, lighter topics, and so on (Comic opera, 2001)).

Ultimately, this section suggests that there is a rich tapestry of genre classification complexity within Gilbert and Sullivan’s works, and that they do not fit comfortably in existing subgenres. Furthermore, there is musicological context for in fact treating the works of Gilbert and Sullivan as a category in its own right, with all the classification implications this might bring. For example, as well as settling on the term ‘comic opera’, Taylor (2018, p. 95) also calls the works the ‘unique music-theatrical genre’, suggesting a subgenre in their own right, while Kuykendall (2013, p. 549) calls them a ‘new hybrid genre clearly influenced by Continental models both low and high, but distinctly English and intentionally operatic’. Therefore, this paper explores the knowledge organisation possibilities of Gilbert and Sullivan’s works being their own sub-subgenre, and what this might tell us about the classification of sub-subgenres more generally.

Gilbert and Sullivan as its own sub-subgenre

This section considers the knowledge organisation of a separate sub-subgenre for Gilbert and Sullivan’s works. The sub-subgenre will be considered through the lens of three knowledge organisation ideas: the characteristics of division that are utilised when treating Gilbert and Sullivan as their own category; the boundaries of such a category from a perspective of grouping and othering; and the web of relationships between Gilbert and Sullivan and other genres and subgenres, looking at hierarchical, equivalence and associative relationships. Before commencing, it should be noted that bibliographic classification schemes do not appear to classify Gilbert and Sullivan’s works as a separate category. For example, Lee (2017) showed that only eight out of seventeen example classification schemes for musical works have subgenres for operas, and Gilbert and Sullivan’s works do not have their own category in any of these schemes, nor is there a separate class for these in the *Library of Congress classification’s* (Library of Congress, 2024) music literature schedules. So, this analysis of Gilbert and Sullivan’s works as a sub-subgenre is carried out as a conceptual idea and one that has precedent in the domain, rather than being directly applicable to bibliographic classifications.

Characteristics of division

The first idea to contemplate is the characteristics of division that make a sub-subgenre for Gilbert and Sullivan’s works. Characteristics of division (or their synonym, principles of division) are defined by Broughton (2004, p. 305) as the ‘defining factor in an array or group of terms’; in

other words, the type of information used to make a subgroup. It should be noted here that while characteristics of division are used in studies of faceting within knowledge organisation – the breaking down of complex subjects into simple ones and then classifying documents by combining simple subjects – this paper is not concerned with faceting. This is because faceting is most useful for ideas which contain multiple types of information, whereas the study of Gilbert and Sullivan's works is a study of how to organise just one type of information: musical-dramatic works. Characteristics of division are useful for this study as they can be applied to an infinite number of levels of information, with the same or different characteristics being used at each level – especially useful for this study of micro-levels of genres.

One important characteristic in the sub-subgenre of Gilbert and Sullivan is the creator, or in this case, creators: the librettist W. S. Gilbert and the composer Arthur Sullivan. So, to be a member of the subgenre of Gilbert and Sullivan, the work needs to be attributed to both creators. Interestingly, Hider and Lee (2023), in their study of characteristics of division used to delineate subgenres across music, do not find creators to be a characteristic of division for musical genres. This is unsurprising considering that genres and subgenres are not typically the products of one artist or collaborating pair of artists, suggesting that this may be a characteristic that is more likely to be found at sub-subgenre level. Lee's (2017) analysis of opera subgenres in bibliographic classifications does find one eponymous subgenre: the *Music dramas of Wagner*, seen in the first edition of the 1953 *Bliss classification*). It is also worth noting that Gilbert and Sullivan as creators are not enough to define this sub-subgenre: the works also need to be within the hierarchy of genres within musical-theatrical works, and ideally within comic opera. Sullivan and Gilbert collaborated on works other than these fourteen musical-theatrical ones, such as three Sullivan songs/parlour ballads which have words by Gilbert (Sir Arthur Sullivan's songs and parlour ballads, 2004), and these would not be considered to be in the sub-subgenre of Gilbert and Sullivan.

Then, there is also arguably a second (and even a third) characteristic. The sub-subgenre of Gilbert and Sullivan is associated with a particular performing space, which is the Savoy Theatre. The works from *Iolanthe* onwards were premiered at the Savoy Theatre, while the preceding works became associated with the theatre in retrospect. Some writers on Gilbert and Sullivan, such as the musicologist Kuykendall (2013, p. 553), argue that 'a work was categorized more easily by the theater in which it was produced than by any specific aspect of its substance'. However, this 'extrinsic' factor (Hider and Lee, 2023), is not found directly in the list of characteristics by Hider and Lee (2023), though it could be argued perhaps that it might be extendable from the characteristic of culture. Then, there is also a potential characteristic for the impresario, Richard D'Oyly Carte, who was responsible for the long-term Gilbert and Sullivan collaboration and who built the Savoy Theatre. A characteristic for producer or producer is also not found in Hider and Lee (2023), again suggesting that sub-subgenres might require extension of our sets of characteristics of division. Thinking about the *interaction* between these three characteristics – creators, performance space and producer – gets somewhat complicated, especially when the earlier works opened before the Savoy Theatre was built (*Thespis*, *Trial by jury*, *H.M.S. Pinafore*, *Pirates of Penzance*, and *Patience*), and in one case (*Thespis*), before Richard D'Oyly Carte was involved. This asks interesting questions about whether all characteristics need to always be fulfilled, and fulfilled strictly, for a work to still belong to a sub-subgenre.

So, this Gilbert and Sullivan example shows that looking at sub-subgenres can bring new characteristics into play, such as those around creator, producer and/or performance space. Yet this example also demonstrates fuzziness about the boundaries of these characteristics.

Boundaries of the class

This leads neatly on to the issue of the boundaries of the potential sub-subgenre of Gilbert and Sullivan. The boundaries of what counts within this proposed sub-subgenre is a well-known issue

in studies of Gilbert and Sullivan. To start, there are two main types of labels given by writers to the works of Gilbert and Sullivan as a sub-subgenre in their own right: Gilbert and Sullivan or Savoy operas. For example, Kuykendall (2013) gives five possible boundaries of the subgenre 'Savoy opera', and there are even more possible permutations which are not mentioned. This paper attempts to analyse and understand these issues with the boundaries of the class from a knowledge organisation perspective. For the purposes of the early part of this section, the contents of the class will be examined, with questions about naming returned to later in the section.

Firstly, there are some interesting questions about whether the strict applications of the characteristics of division discussed above unequivocally create a class which contains the works typically intended by the sub-subgenre of *Gilbert and Sullivan*. There are fourteen comic operas that are considered Gilbert and Sullivan canon – see, for example, the *Gilbert and Sullivan archive* (2024), and the structure of Williams' (2011) work which has a chapter on genre and parody for each of the fourteen works. The first of these, *Thespis*, is problematic from a classification perspective for a number of reasons. The music has been lost (Williams, 2013, p. 22), so there is a question mark to its inclusion, especially if the category is being used to question whether a person or group has *actually* performed all of Gilbert and Sullivan's works. Additionally, *Thespis* was written before Richard D'Oyly Carte's involvement, meaning it would not be included if the characteristic of division of producer was used to define the sub-subgenre. (Intriguingly, the English National Opera guide to the Savoy Operas (2024) says there are 'around 13' Savoy operas by Gilbert and Sullivan, with the 'around' perhaps indicative of the classificatory fuzziness around *Thespis*.) While Kuykendall (2013) argues that theatre is an easier way to categorise the works of Gilbert and Sullivan than the contents of the works – something we could understand in terms of the binary division between intrinsic and extrinsic characteristics of division as posited by Hider and Lee (2023) – theatre also presents classificatory complications as a characteristic. The Savoy Theatre only opened in 1881, after many of Gilbert and Sullivan works had first been performed; therefore, the theatre as place of production can only be used for some of the works, while for the rest, the characteristic becomes more a post-facto backwards association. Another question concerns size of work: *Trial by jury* is not a full-length opera, and instead was a curtain raiser or companion piece, yet almost always appears within the Gilbert and Sullivan sub-subgenre (for example, Williams, 2011; Gilbert and Sullivan archive, 2024; Wren, 2001). This asks questions about parental subgenres: *Trial by jury*'s original genre designation was 'dramatic cantata' (Kuykendall, 2013), so its position in a sub-subgenre that sits hierarchically under comic opera could be questioned. Therefore, even the classification of the fourteen canonical works is questionable from a knowledge organisation perspective. There is a tension between the reception of Gilbert and Sullivan as a sub-subgenre containing fourteen works and the technicalities of how this class is actually defined in classification terms, especially through the problematic characteristics of division around producer and theatre, and the questions around the parental subgenre of *Trial by jury*.

Secondly, and perhaps most pertinently, there are interesting knowledge organisation questions about how far the category of Gilbert and Sullivan extends. The boundaries appear to be disputed in the music domain. For example, in Taylor's (2018) musicological re-evaluation of Sullivan's music, there is a chapter on Gilbert and Sullivan. Here, early non-Gilbert works by Sullivan such as *Cox and box* and *The zoo* are discussed alongside the Gilbert collaborations. There is no Gilbert/no-Gilbert delineation. From a classification perspective, we could define this as two conditions need to be met to be in the category of Gilbert and Sullivan: the parental genre of comic opera *and* the characteristic of creator = Sullivan. This makes sense within the musicological, Sullivan-centred context in which Taylor's work was written. A different example sees a different classification: in the important documentary resource of the *Gilbert and Sullivan archive* (2024), the overall structure of the digital archive sees a fundamental division between

'The Gilbert and Sullivan operas', and 'Other operas and musicals'. The latter has subcategories of 'Companion pieces' (shorter works used to fill programme space) and 'Other Savoy operas' (works which were staged at the Savoy after the main collaboration period was over from 1891 to 1903) (Gilbert and Sullivan archive, 2024). Some works appear in multiple categories, such as *Trial by jury* (Companion pieces and one of the fourteen works) and *The Grand Duke* (Other Savoy operas and one of the fourteen works), which illustrates potential logical holes in this system's characteristics of division and highlights the complexities of trying to divide these works. As a different example, Fitz-gerald's (1925) early work about the Savoy operas includes pre-collaboration works by Sullivan or Gilbert, the fourteen collaborative works, works from the 1890s by Sullivan but not Gilbert, and works from the 1890s and early 1900s for the Savoy Theatre by neither Gilbert nor Sullivan. We note here too the term 'Savoy opera' in the title of this book. This conceptualisation sees a sub-subgenre for Savoy opera, characterised by or characteristics, all falling within a broad genre of staged works. This could be written as Gilbert OR Sullivan OR Savoy Theatre/D'Oyly Carte connection.

So, we can use a Venn diagram, with the overlapping circles representing the four characteristics of division, to create a model of the characteristics of division in the sub-subgenre of Gilbert and Sullivan – see Figure 1. This depicts the logical relationships between the four characteristics and illustrates the logical shortcomings of the domain's conception of Gilbert and Sullivan as a sub-subgenre. Specific areas of the Venn diagram are indicated by red circles and examples from these will be mentioned below. The fourteen works typically known as *Gilbert and Sullivan* are in the centre where the four circles meet – Gilbert, Sullivan, Savoy Theatre and D'Oyly Carte. Area 1 represents the concentricity of the four circles, and an example work is *The gondoliers* (by Gilbert and Sullivan, produced by D'Oyly Carte at the Savoy Theatre). However, the Gilbert and Sullivan sub-subgenre also includes areas where only two or three of the circles meet: area 2 with Gilbert, Sullivan and D'Oyly Carte but without the Savoy Theatre (for example, *H.M.S. Pinafore*, produced by D'Oyly Carte but before the Savoy opened), and the small area 3 which has Gilbert and Sullivan, with no D'Oyly Carte or Savoy Theatre (for example, *Thespis*, which was not produced by D'Oyly Carte and opened before the Savoy was opened). Figure 1 also illustrates what broader conceptions of Gilbert and Sullivan as a sub-subgenre look like from a knowledge organisation perspective, as seen in the domain literature. These are particularly pertinent when the term The Savoy Operas is used. Area 4 shows the musical-theatrical works by Sullivan (but not Gilbert) and produced by D'Oyly Carte at the Savoy, such as *The rose of Persia*; while area 5 conceives of a sub-subgenre that includes all musical-theatrical works at the Savoy which are not by Sullivan or Gilbert, such as *The vicar of Bray*. Area 6 is for works by Sullivan with no association with Gilbert or the Savoy; this is a particular classificatory home for Sullivan's 'Grand opera' of *Ivanhoe*, which was produced by D'Oyly Carte but not for the Savoy and not with Gilbert. This example is noteworthy as *Ivanhoe* would not be included in any musicological or popular conception of Gilbert and Sullivan / Savoy opera, yet does share many of their characteristics of division. This highlights the importance of precision in defining the boundaries of classes within sub-subgenres. Area 7 is for musical-dramatic works by Gilbert and not Sullivan, which in practice mostly includes works written before the Gilbert and Sullivan collaboration. The musical entertainment *Ages ago* is an example of this.

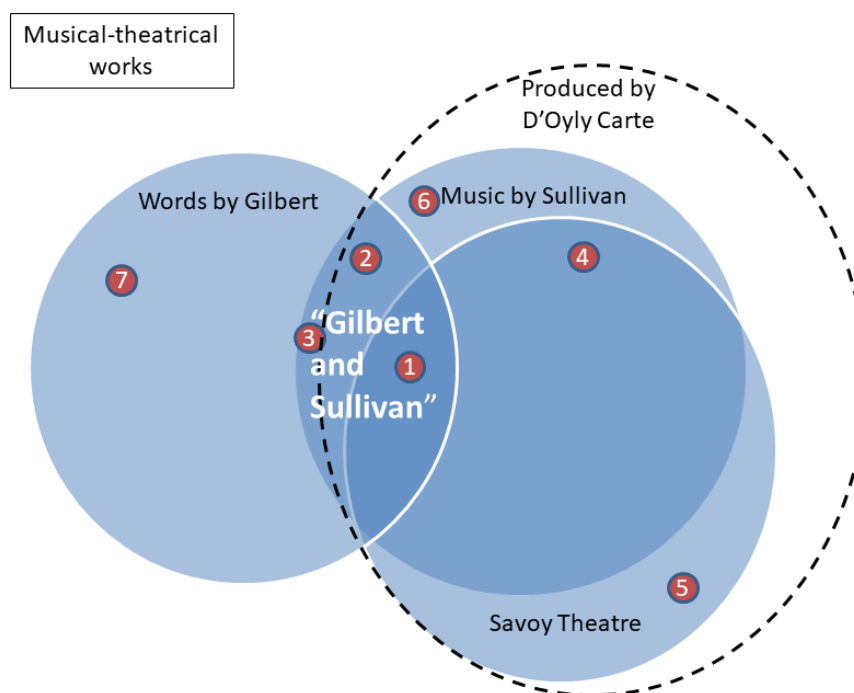


Figure 1. The sub-subgenre of Gilbert and Sullivan as characteristics of division.

Putting this all together, from this model we can conceive of *Gilbert and Sullivan* being areas 1, 2 and 3; while these works are often talked about as the concentricity of all four circles/characteristics (area 1 only – Gilbert, Sullivan, Savoy Theatre, D'Oyly Carte), their actual knowledge organisation is more typically and more technically defined by just two characteristics – Gilbert and Sullivan. This is an interesting conceptual point about the classification of this sub-subgenre, and potentially applicable to other sub-subgenres where there is a more malleable categorisation in practice than the strict theoretical application of multiple characteristics of division. Furthermore, this model also depicts the broader category of Gilbert and Sullivan, which includes works related to and influenced by, the collaborators but not necessarily by them both, and moves beyond just areas 1-3. This broader category is typically called *Savoy operas*, but confusingly the term *Savoy opera* is sometimes used as a synonym for Gilbert and Sullivan. (This mulching together of a hierarchical category and a synonym is explored below.) The broader categorisation might add in addition area 4 (works by Sullivan but not by Gilbert), plus perhaps even 5 (any work at the Savoy Theatre by any composer) and even occasionally also 7 (musical-theatrical works by Gilbert, but not Sullivan). Thus, this model demonstrates the complexities of Gilbert and Sullivan classification and shows structurally how Kuykendall (2013) can list five different meanings of the category title '*Savoy opera*'. It also highlights potentially interesting points about sub-subgenre classification, such as the malleability of application of characteristics of division and how sub-subgenres can be defined by three or even four characteristics.

Relationships

Sub-subgenre can also be thought of in terms of thesaural relationship: hierarchical, equivalence and associative, as seen in thesauri and other knowledge organisation systems (Aitchison et al., 1997). These relationships as applied to Gilbert and Sullivan are depicted in Figure 2. The hierarchical, generic relationships are in the most part straightforward. However, there is a

question whether there is legitimately a category for English comic opera, and this has an impact on whether Gilbert and Sullivan is a sub-subgenre or a sub-sub-subgenre of opera. Furthermore, the discussion in the above section germinates the idea of a bigger category of Savoy opera, from which Gilbert and Sullivan's works would then form a sub-sub-subgenre. (To add to the complications, it could be argued that Savoy opera and English comic opera are actually the same category in practice, but this is a more musicological discussion and outside the scope of this paper.) To this end, both English comic opera and Savoy opera are shown with dotted lines in Figure 2 as potential hierarchical levels, and to simplify the discussion, Gilbert and Sullivan will remain being called a sub-subgenre (rather than a sub-sub-subgenre or sub-sub-sub-subgenre). This question about the number of hierarchical levels between opera and Gilbert and Sullivan suggests some knowledge organisation instability around sub-subgenre levels. It also implies that micro-levels of genres may be more affected by queried subdivisions than genres and subgenres, as they are lower down the hierarchies and the effects of any instability may be magnified.

There are also two equivalence relationships, as depicted in Figure 2. The simple equivalence relationship sees Gilbert and Sullivan with a synonym of G & S, as described by Kuykendall (2013) and Taylor (2011). The more complicated synonym involves the term Savoy opera, and this equivalence relationship between Gilbert and Sullivan and Savoy opera is found in musical sources. For example, Kuykendall (2013, p. 554) calls Savoy opera '*merely an elegant synonym for the pieces of "G&S"*'. Yet, as discussed in the previous section, Savoy opera is also used to denote a wider group of works. We are therefore left with a classification conundrum where Savoy opera is both a synonym for Gilbert and Sullivan but also potentially a parental term too, a kind of combination between equivalence and hierarchical – depicted in Figure 2 by a curved line and a question mark. The English National Opera (2024) guide offers a particularly fascinating take on this: Savoy opera started as a wider group of works than just Gilbert and Sullivan, but as non-Gilbert and Sullivan works dropped out of the repertory, Gilbert and Sullivan and Savoy opera ended up becoming synonyms. So, this portrays the idea that Gilbert and Sullivan and Savoy opera are still hierarchically related in theory, but the contemporary repertoire view is that they are *in practice* synonyms. The levels have been squashed so sub-sub-subgenre (Gilbert and Sullivan, *with parent of* Savoy opera) has been flattened down to be just a sub-subgenre (Gilbert and Sullivan, *known as* Savoy opera). (The reality is more complicated than English National Opera (2024) suggests, as there are Savoy opera boundary works not by both Gilbert and Sullivan which are still reasonably regularly performed, such as *Cox and box*, *The zoo*, and so on.) This also emphasises how ecosystems of genres changes over time, and the importance of temporal views of genre classification. It also proposes that lower levels of genre hierarchies might be more sensitive to temporal changes.

present in the earliest iterations of that sub-subgenre. Furthermore, looking at the number of characteristics of division and different types of space helps to illuminate why the domain discourses have so many different ways of defining Savoy operas / Gilbert and Sullivan. For example, the interwoven but not entirely overlapping relationship between producer and theatre causes particular classification questions. The temporal frame also becomes an important consideration: the hierarchical has become the equivalent with the passing of time in the case of Savoy opera.

The second research question asks what can be learnt about sub-subgenres and classification from this case study. To start, the paper showed some of the complexities which emerge from studying sub-subgenre classification, and how some of these areas only appear to arise when looking at this micro-level of genre hierarchy. This paper also shows how novel characteristics of division such as creators, producers and theatres can emerge when we start drilling down to the level of sub-subgenre, which had not been seen in previous studies of subgenres (such as Hider and Lee, 2023). While these characteristics might be particular to the Gilbert and Sullivan example, they do suggest that particular characteristics of division might only emerge as we get to these lower levels. Furthermore, this study shows that the fuzziness around defining and applying characteristics of division, and instability around hierarchies of opera over time appears to increase when dealing with these lower levels of genre hierarchies such as sub-subgenre and sub-sub-subgenre – presumably because the impact multiplies with the more levels you encounter. These all suggest that further study of sub-subgenres could be useful, as well as thinking about the classification of sub-subgenres in the temporal frame.

As this is only a preliminary study about one sub-subgenre case study, there is much potential for future work. The next steps would be to consider more examples of interesting sub-subgenres. This could start by using a similar methodology to do rich analyses of other examples from musical-theatrical works, and then move to other musical examples, followed by sub-subgenre analysis of examples from art forms such as (non-musical) theatre and poetry. From this point, a model of sub-subgenres could be developed. Ultimately, this positioning of Gilbert and Sullivan as a sub-subgenre provides novel insights in our understanding of the genre classifications of Gilbert and Sullivan and explanations for the complexities that these works present. It also demonstrates the importance of contemplating sub-subgenres to our understanding of the classification of genres more generally.

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