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# Towards the Disintermediation of Creative Music Search: Analysing Queries To Determine Important Facets.

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**Purpose:** Creative professionals search for music to accompany moving images in films, advertising, television. Some larger music rights holders (record companies and music publishers) organise their catalogues to allow online searching. These digital libraries are organised by various subjective musical facets as well as by artist and title metadata. The purpose of this paper is to present an analysis of written queries relating to creative music search, contextualised and discussed within the findings of text analyses of a larger research project whose aim is to investigate meaning making in this search process.

**Method:** A facet analysis of a collection of written music queries is discussed in relation to the organisation of the music in a selection of bespoke search engines.

**Results:** Subjective facets, in particular Mood, are found to be highly important in query formation. Unusually, detailed Music Structural aspects are also key.

**Conclusions:** These findings are discussed in relation to disintermediation of this process. It is suggested that there are barriers to this, both in terms of classification and also commercial / legal factors.

*Keywords*

*Film music search facet analysis mood genre*

# 1. INTRODUCTION

Music Owners, such as record companies and music publishers, attempt to exploit the recordings and compositions they control by encouraging their use in films, TV programs, commercials, websites and corporate presentations. The process of adding music to a moving image is known as synchronisation. Many Owners' collections are digitised and act as digital music libraries. Music Users such as ad agency creatives and music supervisors search for music for synchronisation. They generally deal direct with a number of expert intermediaries employed by the Owners, who interpret the query and perform searches of their own catalogues on the Users' behalf.

These professional Owners and Users are choosing music on behalf of others, often to convey or reinforce a message. The search for music to accompany moving images is frequently an unknown item search. The Users often do not know specifically what they are looking for but they seem to have very clear ideas of what elements are important, such as Mood, Genre and Structure. In advertising they are also often looking for a suitable 30 second element, not the whole song. A number of Owners operate online search tools which are designed to disintermediate this process. In an investigation of the metadata presented by these bespoke Music Search Engines (MSEs) [1] to the User it was shown that Bibliographic and Descriptive terms are used in their music classification schemes. Some of these such as Subject and Mood, are outside the traditional music classification paradigm [2].

Recent important studies in music user information need [3, 4, 5, 6, 7] have focussed on consumers. This paper is part of ongoing research into a group of creative professionals who may have different information needs than recreational consumers. A detailed analysis of a selection of 27 written queries is presented and discussed within the context of other findings relating to the communication processes of creative music searchers.

The aims of this paper are: to investigate the semantics of creative music search from both a User and an Owners perspective; to consider the relationship between the query and the system; and to make observations on whether the process may be disintermediated. The aims of the wider PhD research of which this is a part are: to evaluate creative music synchronisation professionals user information needs; to develop and test a model which accurately reflects meaning making in the search process; and to propose an ideal music information retrieval (MIR) system for the creative music synchronisation professional community. This qualitative research focuses predominantly on the language used by professionals in creative music search and it is not planned for any experimental systems to be developed as part of this project. It is hoped that these findings will, however, make a contribution to the

literature on information needs, communication processes and meaning making of music Users and, in turn, inform systems development in this area.

In the next section the method of data collection is presented. Section 3 discusses Findings, focusing on descriptive and bibliographic facets and additional ways of constructing and clarifying synchronisation queries and comparing the facets of the search engines to those of the User discourses. This is followed in Section 4 by a discussion on factors affecting whether the process may be disintermediated. Conclusions are summarised in Section 5.

## 2. DATA COLLECTION

During the course of a wider PhD research project looking at information needs and behaviour in the process of searching for music to accompany moving images [2, 8, 9, 10] a large amount of textual data was collected from a range of sources: face-to-face interviews with stakeholders; bespoke search engines designed to aid the creative music search; lengthy written queries; and observations of participants making relevance judgments for music use. These sources were chosen to reflect the holistic approach to the view of the process under investigation recommended by [11].

### 2.1 INTERVIEWS

A snowball sampling [12] approach was used to identify participants involved in the creative music search process. At the end of each interview the participant was asked to recommend other individuals to interview. This approach quickly removed the sample from the researcher's preconceptions of who may be relevant. The recommendation process also allowed access to otherwise inaccessible participants. Each interview followed City University ethics procedures including informed consent and anonymisation of interview and commercially sensitive texts. The interviews were all up to one hour long, face-to-face and were done at a time and place of the participant's choosing. They were digitally recorded, transcribed word-for-word (including repetitions and hesitations but ignoring inflexions) into MS Word and imported into NVivo 8 software [13]. This flexible Computer Assisted Qualitative Data Analysis (CAQDAS) package allows texts to be searched, coded, annotated and queried. When the data being collected became saturated and no new information was forthcoming the interviews were halted. A total of 23 interviews took place. These were read through carefully and coded, using NVivo's coding facility, according to themes which arose out of the talk.

### 2.2 SEARCH ENGINES AND MUSIC METADATA

Some multi-national music rights holders operate bespoke music search engines (MSE). The size of these catalogues reportedly ranges from 70,000 to more than 4 million recordings [2]. Six of these were examined in detail. The textual metadata presented to the User by

these search engines was collected from each website, removing them from their original context to aid comparison and arranged in tables in MS Word and imported into NVivo 8 as above.

## 2.3 WRITTEN QUERIES

Written queries, or ‘*briefs*’ were collected from creative music searchers who are employed by advertisers or brands to find music to be used in advertising, on websites, in corporate presentations etc.. Five of these briefs related specifically to TV trailer use, 21 related to commercials (one was duplicated), one was for web-site use. Briefs are often sent by email to Music Owners when a music search is taking place and they attempt to encapsulate the search criteria for an unknown piece of music which will match existing footage. They are a rich source of information regarding the semantics of music search. They are often up to one page in length and include a range of detail explaining the Users search criteria to the catalogue Owner. The briefs were anonymised as requested by the participants, brand names and other identifying terms being removed or replaced by generic terms and imported into NVivo 8 software for analysis. A coded example (Brief 009) can be found in the Appendix. In the example the NVivo coloured coding stripes have been replaced by ‘XML-type’ coding before (<...>) and after (</...>) each coded section for ease of printed reproduction.

## 2.4 OBSERVATIONS

Seven individuals involved in this type of search agreed to take part in participant observations. All of the briefs were applied by the corresponding author to each of the search engines, generating lists of results. Only the vocabulary used in the briefs was applied to each search engine, in order to match the query as closely to the results as possible. The results of seven searches were then played to participants who had read the relating brief and their comments on the relevance of the music to the brief were recorded digitally. Again these were transcribed and imported into NVivo 8 for analysis.

# 3. FINDINGS

## 3.1 INTERVIEWS

The interviews were coded according to themes that arose across the interview texts. Key issues which were coded in the interviews included Stakeholders, Briefs, Product Knowledge, Relevance, Meaning, Context. There are a number of stakeholders involved in the search and decision-making process:

Music Owners	Music Users
Synchronisation Dept, Legal/Business Affairs, Composer, Performer, Marketing & Promotions, Artists & Repertoire	Producer, Director, Film/Music Editor, Music Supervisor, Music Searcher, Client, Ad Agency Creatives.

Table 1 Stakeholders in creative music search [adapted from 9]

All of these stakeholders are likely to have different motivations and information needs. However the lead intermediary on the Owner side is the Synchronisation Department, while the lead searcher on the User side is the Music Supervisor or freelance Music Searcher. The written communication between the User and Owner is known as a ‘brief’, which may take the form of an informal email, a widely circulated document, a script extract, conversation or a piece of moving image. Query clarification takes place in conversations between User and Owner, often using example (or ‘temp’) tracks. The knowledge of the catalogue aids the intermediary in their search as they instinctively match textual codes to existing material, or match previous similar searches to archived sets of results in the form of playlists. The participants found it difficult to articulate their relevance criteria but it appeared that both content-based and contextual factors came into play. They often complained of the difficulties in interpreting briefs written by people inexperienced in expressing musical criteria. They generally agreed that although the final contextual use of the music in the film clip is central to the choice, over and above any marketing criteria many factors are considered in the final decision. Unknown item-searching is the norm.

An analysis of the text coded under these categories concluded that the involvement of humans in the communication and search process is ‘*central in the process*’ [9], although some effort has been made to disintermediate it with bespoke search engines, and that both the content of the music and the context of its use needed to be considered in the development of automated systems that attempt to reflect this type of creative music search.

## 3.2 SEARCH ENGINES METADATA

The terms employed within the 6 MSEs were coded by Bibliographic facets such as Artist, Title, Writer, and Descriptive facets (including Mood, Subject, Genre). These facets are presented in Table 2:

Search engines	
Facet	Quantity
Bibliographic	
Artist	6
Song title	6
Writer	6
Year	6
Album title	3
Chart position	3
One stop	3
Originating territory	3
Descriptive	
Genre	6
Keyword	6
Tempo	6
Lyrics	4
Mood	4
Subject	4
Vocal mix / instrumental	3

Table 2 MSE facets (adapted from [2])

Mood descriptors varied widely in frequency across the search engines, ranging from a choice from 8 to a choice from 612. A table of the Top 25 most frequently used Mood categories across the 6 search engines (Table 3, below) illustrates the wide range of terms used in this category.

Search engines	
Word	Count
high spirited	7
dramatic	6
dreamy	6
dynamic	6
passionate	6
rousing	6
sad	6
sentimental	6
aggressive	5
ambient	5
angry	5
anthemic	5
atmospheric	5
ethereal	5
euphoric	5
exuberant	5
fiery	5
funny	5
happy	5
light	5
melancholy	5
mellow	5
reflective	5
time	5
upbeat	5

Table 3 Top 25 Moods - all search engines

Key issues arising from the analysis of the data included the difficulties of performing unknown item search using these interfaces, the problems of mismatching subjective Descriptive language, the fuzzy nature of genre terms, the use of lyric searches, mood categorisation, and the importance of non-technical musical terms. In [2] it is concluded that these systems are organized by taking a domain analytic approach – the Owners classifying the documents by purpose [14]. This domain-specific descriptive approach to music categorisation is far removed from traditional bibliographic music cataloguing. It appeared that, despite evidence of attempts to reflect the Users’ ways of thinking about music, these search engines were grounded in the language of the Owner and that it was likely that this would impede the usefulness of these automated services.

### 3.3 BRIEFS

The findings in 3.1 and 3.2 indicated there would be some value in analysing User discourses to evaluate whether they match the way the MSEs are organized. In pursuit of substantiation of this the 27 queries were analyzed in depth and examined for links with and differences to the MSEs organization. Each brief was analysed word by word and phrase by phrase and coded according to facets derived from the previous MSE analysis (Artist, Title, Year, Genre, Subject, Mood etc). As new facets arose these were iteratively added to the coding list. When all of the briefs had been coded, the facets were ranked by frequency of appearances within the set of briefs (see Table 4). The facets in the briefs that also appear in the MSEs are *italicized*. This indicates that although the Owners are offering choices to the User these are not comprehensive.

Briefs	
Facet	Quantity
<b>Bibliographic</b>	
<i>Date / Period (Year)</i>	20
Audience	16
<i>Artist</i>	11
<i>Instrument</i>	9
Extra-musical	9
<i>Song Title</i>	7
<i>Chart position</i>	5
Budget	4
Version	3
Length	3
<i>Clearable (One Stop)</i>	3
<i>Territory</i>	1
<b>Descriptive</b>	
<i>Mood</i>	130
<i>Genre</i>	39
Music Structure	21
<i>Lyrics</i>	14
<i>Tempo</i>	10
<i>Instrumental</i>	3
Music Style	3
<i>Song Subject</i>	1
<i>Vocal</i>	1
Other references	1
Exploitation	1

Table 4 Briefs - music facets

The sections that had been coded were then examined in turn in order to consider the words that had been used within each code. For example, in the code ‘Artist’ there were 11 references in total (Table 4). It is a simple process with NVivo to isolate these references and analyse their role within the discourse of the query. This approach enables the researcher to consider not just the words that are coded (eg ‘Pink Floyd’) but also the words around the coded words:

“i.e. a classic piece of music like Pink Floyd - We don't need no education - a track which is about rebellion.” (Brief 001)

The value of this discourse analytic approach [15] is that it is the words on either side of the coded words that help to explain the context of the reference. In the example above, if ‘Pink Floyd’ were the only words considered, we would not appreciate that this is partially a similarity request rather than a known item request. The User is not solely asking for Pink Floyd’s ‘We don’t need no education’ (sic – the correct song title is ‘Another Brick In The Wall Pt 2’). Pink Floyd are partly being used as a similarity metric to give context to the request, although the User is also asking whether this song (or a version of it) is available.

### 3.3.1 DESCRIPTIVE FACETS

By far the main facet used to describe the music being sought is that of Mood, which featured in 80% of the briefs (Table 5). Positive descriptors such as ‘charming’, ‘beautiful’, ‘fresh’, ‘playful’, ‘quirky’, ‘exciting’ slightly outweighed negative terms such as ‘dark’, ‘uncertain’, ‘anxious’, ‘sinister’. Notably these negative terms are mainly used as ‘Exclude’ terms in order to instruct the intermediary that music matching these would not be relevant for the search in question:

“Please do not pitch music with an overtly sinister, dark, or serious feel” (Brief 011)

Although a larger sample of queries could generate more ‘negative’ mood criteria it seems likely that as these queries are focussed on finding music for advertising, the users are looking for positive music moods to associate with and enhance consumers’ opinions of their products.

Briefs	
Word	Count
fun	5
quirky	4
charming	3
dramatic	3
fresh	3
happy	3
positive	3
charm	2
cool	2
dark	2
drama	2
emotional	2
epic	2
great	2
leftfield	2
light	2
optimistic	2
organic	2
original	2
playful	2
rustic	2
serene	2
simple	2
sincerity	2

Table 5 Top 25 Moods - all briefs

Mood has been used to match music to images since the time of silent movies [16] and advertising theorists are well aware of its value in selling products [17]. As a subjective facet it is not an ideal way to describe the elements of music that the user is looking for, as it is difficult to match the users meaning with that of the intermediary or, indeed, the system. However the use of Mood (this is specified either for the sought music or to describe the desired ‘feel’ of the finished advert) far outweighs any other term employed in this set of queries.

Unsurprisingly Genre (“heavy metal”, “rock”, “pop”, “lofi”, “folky”, “classical”, “jazz”) is mentioned in many queries as a guide to the music being sought. Although Genre definitions are fuzzy, generally they are agreed by a community and can be applied more successfully than more subjective terms such as Mood. Genre is a useful way for the search to be narrowed down, at least, and its widespread long term use in describing especially different forms of popular music as well as the three main genres (Art (Classical), Popular (Pop) and Folk) indicates it is an extremely valuable approach to music classification. The use of Genre terms can help as codes in describing music for a particular audience (products aimed at the youth market are often associated with contemporary pop), or which instruments would be appropriate (electric guitars do not often figure in classical).

Given the short length of the TV commercial, it is rare that a whole piece of music is used to accompany the footage, unless it is bespoke. The Users are looking for a specific element of a piece that they can use to convey their message to the viewer. They may discuss (in Music Structure) what musical elements they are looking for that may appear within a song: “should have some quieter moments”, “music evaporates into nothing”, “build to a swelling, string-soaked chorus”, “...with a crescendo in it”. The word, build, in particular appears regularly in these queries and in other discourses surrounding these practices. These content-based criteria are very important to these Users on two levels. They help to convey the message to the viewer, and they also allow important Extra-Musical Factors (such as sound effects or voice overs) to be used successfully.

### 3.3.2 BIBLIOGRAPHIC FACETS

While the use of subjective facets seemed to be key in communicating Users’ music needs to Owners, a equal number of bibliographic facets are also employed (Table 4). The benefit of factors such as Date/Period (of recording being sought), key words required in Lyrics, Tempo, Instruments featured in the track and Chart Position is that they are easily attached to music documents as metadata and can be more reliable search parameters.

The value of Date/Period is that it can be matched to target Audience demographics, as well as being used to refine a general description of a style of music. There are relatively frequent references to finding music that is “contemporary”, while other briefs refer to decades rather than particular years:

“Please avoid 80s electronica, retro tracks, or anything that could be considered 'old skool'.” (Brief 011)

“Instinctively we think that the track we need is probably from the 50’s or 60’s, maybe the 70’s.” (Brief 012)

Songs that include particular lyrics are discussed. Examples of these include:

“We are looking for lyrics which need to be relevant and carry the ad. Think along the lines of ideas / imagination / optimism / growth / design / drive / movement etc etc...” (Brief 007)

“Lyrics and choruses involving sleep, eyes, waking, dreaming, touch, or some other direct link to the narrative, would be great.” (Brief 012)

However lyrics are not always important and often Instrumentals (no vocals) are requested. This use of instrumentals not only gives space to voice overs (VO) and sound effects (SFX) but recognises the creative nature of advertising and sophistication of the viewers who are well-versed in interpreting these short messages without relying on lyrical reinforcement.

Content-based musical facets such as tempo and instruments are occasionally mentioned in this sample of briefs. It is interesting to note that by far the most frequent tempo descriptor is ‘upbeat’, a term indicating a positive mood as well as a faster than average tempo. This particular combination here of affective and structural facets into one descriptor is very effective shorthand which appears so frequently in interviews on the subject as to become a cliché [2]. Users also mention key instruments (piano, guitar, strings, percussion) they wish to appear in the selected music.

Artist name is occasionally used, mainly as a similarity guide rather than a known item search:

“We are looking for a recognisable song that reflects a ‘Happy Goodbye’. Think ‘My Way’ as performed by Frank Sinatra.” (Brief 023)

In fact it would not be easy for these MSEs to match items by similarity. They can only search catalogue they control and the example may not be within that control. Intellectual Property (IP) legislation can prohibit them from including material not under their ownership, restricting their ability to develop this type of search functionality.

Chart position, on the other hand, is easily available to Owners and is a simple way to measure ‘familiarity’. If a User requests a familiar tune this means it is likely to have appeared in the sales charts so searching by chart position can be used in a ‘familiarity’ search.

Although they are often the most important factor in deciding whether a piece of music is used (or not), budgets are rarely revealed in queries:

“..budget can be stretched.” (Brief 001)

“..without being very costly!” (Brief 017)

“Don’t worry about budget please.” (Brief 024)

The expert interpretation of these Budget facets along with a knowledge of the brand’s budgeting history and an understanding of which elements of the catalogue command different rates can lead to certain types of music being offered.

### 3.3.3 QUERY CLARIFICATION

Although most queries in this sample focussed on advertising, a small number were concerned with looking for music for websites or TV trailers. Mentioning the Format (ad, tv, website) in the query gives richer detail to the intermediary about the eventual use of the music being sought and is an additional clue to specific facets which may be of interest. These would include length (TV ads are normally 30 seconds long, while website uses may require the whole song, or a loopable section) and raise the issues of licensing – using a piece for a TV ad would require different permissions than web or TV trailer use. These may help the intermediary in narrowing down the search results to manageable levels. Other Visuals Facets, such as Project Title, Visuals Subject, Brand, Visuals Function and Visuals Available are also incorporated into the queries, as illustrated in Table 6. These provide detailed contextual information for the intermediary and help to clarify the query further.

Visuals Facets	
Facet	Count
Format (ad, film, tv)	25
Project Title	18
Visuals Subject	16
Brand	13
Visuals Function	6
Visuals Available	6

Table 6 Briefs - Visuals Facets Frequencies

There are a number of phrases within the queries where the Users attempt to clarify their query by discussing the role of the music within the finished advert (Table 7). Music Function appears frequently. The Users describe how they wish the music to interact with the visuals, or how they want the music to enhance their message:

“...juxtapose against this theme...” (Brief 001);

“The music needs to complement the visuals without being too cold” (Brief 003);

“...reflect the charm and playful nature of the spot” (Brief 004);

“tidily juxtapose with the childlike imagery of the animatic” (Brief 007);

“reflect the gliding motion of the journey” (Brief 009).

Query clarification	
Facet	Count
Music Function	47
Exclude	22
Film title	9
Similarity	6
Left Field	4

Table 7 Briefs - Query clarification frequencies

The value in matching music to moving images is that one can enhance the other (in the case of advertising the music is designed to enhance the visuals, while with music videos it is the visuals that are designed to enhance the music). It is not clear from the queries how this is evaluated, and while other research indicates this is often a ‘gut feeling’ decision based on experience and creativity, there is also a wealth of literature which discusses music and its use with film since the end of the 19th century from which users may draw. Clearly this type of criterion can only be evaluated once the music is played simultaneously with the image. ‘Demo’ versions of the final advert are frequently supplied along with the query in order to help the intermediaries in their search.

While the bulk of the text of the queries describes what the users are looking for, they often also clarify what would not suit. These Exclude elements again are designed to guide the search by narrowing down the results set:

“we want to avoid anything that makes it feel like a middle class day out at the shops” (Brief 019);

“avoid anything too folky or dreamy”, “something known will be tossed” (Brief 025),

“it is important not to emotionalise things too much” (Brief 026)

although careful interpretation by the intermediary is again required.

For the purposes of query clarification other intertextual references may be used, such as Films that use a particular type of music, Similarity to other suitable pieces or artists, and the option to the intermediary to offer a piece that does not appear to match the query but may be appropriate: this Left Field element reflects the subjective nature of this type of searching, and allows the expert intermediary to make a contribution to the search using their own experience and interpretation of the visuals:

“Please also feel free to suggest anything off brief that you think works well to picture, we are open to suggestion no matter how left field.” (Brief 007)

“But feel free to send other suggestions if you think they work.” (Brief 012)

There are many anecdotal examples of music being used in commercials that did not meet the original brief and were supplied by the intermediary as a ‘Left Field’ suggestion:

“She just threw that in as a kind of a random idea, and they went for it.” (Music Supervisor)

“Sometimes you have to come up with something that’s completely off the wall that the director won’t have thought about” (Music Publisher)

### 3.4 OBSERVATIONS

Again, the texts of the relevance judgements were coded using the same codes as in 3.2 and 3.3, iteratively adding new codes where no existing categories applied (Table 8). These were matched to Saracevic’s information and individual characteristics of Content, Object, Use, Cognitive, Affective and Belief [17] and reported in more detail in [16]. This analysis indicates there is a stronger relationship between relevance judgments in these music searches and those reported in the text retrieval literature, although the significance of Mood in creative music search does not reflect in text search.

Observations	
Code	Count
<b>Bibliographic</b>	
Date	76
Artist	24
Clear	14
Territory	4
Song title	3
<b>Descriptive</b>	
Mood	327
Genre	97
Novelty	84
Lyrics	81
Production	64
Instrument	60
Tempo	47
Music structure	45
Music function	40
Vocal	39
Visuals subject	33
Subjective	25
Extra-musical	24
Music style	22
Instrumental	18
Budget	16
Audience	14
Visuals	13
Would not pitch	13
Build	12
Version	11
Brand	9
Syncability	9
Message	8
Similar	7
Time availability	4
Feel	3



Format	3
Would pitch	2
Volume	1
Song subject	1
Owners	1

Table 8 Coded observations relevance judgements [16]

Mood was clearly an important category in these experimental observations and was mentioned by the participants 327 times in their comments on whether or not a track matched the query which led to the track on offer. Table 9 illustrates the Top 25 Mood criteria used by the expert music searchers in their comments, some of which are drawn from the briefs themselves.

Observations	
Word	Count
fun	29
happy	21
quirky	17
fresh	14
emotional	11
control	10
vibe	10
jaunty	9
serious	9
seriously	9
energy	8
childlike	7
quality	7
cool	6
emotion	6
playful	6
tension	6
warmth	6
atmospheric	5
ability	4
emotionalise	4
hilarious	4
lighthearted	4
playfulness	4
power	4

Table 9 Top 25 Moods - observations texts

Mood was followed by a number of content-based textual facets such as Genre, Lyrics and Date. Music audio facets including Production, Instrumentation and Tempo were also important as was the Contextual facet of Novelty – an extremely important factor in attracting the attention of the viewer to advertising in particular. It is particularly noted that the difficulty in classifying musical Mood would compound the difficulties of disintermediating this process. Language has many ways of expressing emotions and it is only by matching the terms employed by the search engines to those within the briefs and other discourses that the search engines may start to meet the needs of the users.

In view of this, the Mood descriptors of three data sources (search engines, briefs, observations) were

compared. It was found that 14 terms appeared within each source, 63 terms appeared twice (of which 42 were found in the search engines and in one of the User discourses), and 508 were found occurring one time. The 14 terms which appeared in each of the three sources are listed in Table 10:

Search engine / Brief / Observation
Word
carefree
dreamy
easy
emotional
epic
fun
happy
lighthearted
playful
positive
quirky
serious
smooth
upbeat
uplifting

Table 10 Moods across all three data sources

The words in the search engines that matched *either* the briefs *or* the observation texts are detailed in Table 11:

Search engine / brief
cinematic
comedic
dark
dramatic
ethereal
good
inspiring
like
motivational
optimistic
raw
romantic
rousing
sentimental
sinister
strong
triumphant
Search engine / observation
anxious
atmospheric
calm
carefree
cheesy
childlike
down
downbeat
dreaming
earnest
energetic

feelgood
floating
friendly
intimate
mellow
powerful
relaxed
sensual
sexy
sophisticated
sweet
tense
vibrant

Table 11 Matches between Owner and User texts

Identifying these key moods shows that there is some agreement across the Music Owners and Music Users regarding the semantics of music, regardless of whether their interpretation of these textual descriptors matches. Clearly it is difficult to catalogue music by such subjective terms as ‘carefree’, ‘upbeat’ and ‘dreamy’, and it is outside the scope of this paper to offer a solution to this problem. However it is important in the development of these types of digital libraries that their vocabularies match those of the domain of the users.

## 4. SUMMARY

We have seen that music briefs describing music which will accompany moving images incorporate a range of content-based music facets and additional contextual detail. Some of these can be matched with bibliographic metadata, while others (tempo, instruments, and especially structural facets such as crescendo or build, can be retrieved using state-of-the-art content-based retrieval. However a large number of subjective facets are used, relying on a shared understanding of the meaning between the User and Owner. The expert intermediaries employed by the Owners are well-versed in interpreting these queries, may have the opportunity to discuss them in detail with the Users and sometimes view a copy of the piece of film in question to help in their search.

Building a searchable digital library that suits this verbose and subjective type of request is not an easy task. Granted, some of the bibliographic facets can be dealt with by applying suitable metadata fields, but these have to be accurate if they are to be of any value. Songs are often classified by inexperienced humans leading to inconsistent and unreliable metadata [2]. With regard to the bibliographic facets this is a solvable problem. However it appears from this analysis that these searches rely more on descriptive metadata and detailed musical structural facets than factual bibliographic detail. This means that if the process is to be satisfactorily disintermediated the focus needs to be on successfully matching query terms with relevant and suitable metadata combined with successful feature extraction and state-of-the-art content-based retrieval techniques.

Let us consider Mood. Users employ a wide range of words:

‘charming’, ‘beautiful’, ‘fresh’, ‘playful’, ‘quirky’, ‘exciting’, ‘dark’, ‘uncertain’, ‘anxious’, ‘sinister’.

The MSEs also use a wide range of Mood descriptors from controlled vocabularies, which are presented to the User for them to select the most appropriate to their search (Table 3).

Encouraging a User to select a Mood from a controlled vocabulary, rather than asking them to input it as a keyword means it is the Owner who is also involved in encoding the query to match the system, rather than the User encoding the query to match the music being sought. This can remove the creative element of the search from the User and may dissuade them from attempting to perform their search online. Clearly, if the Mood choices are to be presented to Users then it is important to investigate how they determine whether a piece is ‘charming’, ‘beautiful’ or ‘fresh’ and developing the controlled vocabulary accordingly. This applies equally to Genre, although as previously stated, Genre is less subjective than Mood. The variation in interpretations of the cultural meanings of music reinforces the value of taking a domain analytic approach when developing music search tools [18].

It is also highly unusual that these searches are focusing on a small element of lengthier works. The viewer only hears up to 30 seconds of music in a TV commercial, probably less. Most popular songs last around 3 minutes. It is very important in the search process that the part of the piece that matches the search criteria is found. Songs may vary in mood, tempo, may have crescendos at the middle or the end. The whole song has to be listened to in order to find out whether it includes a relevant section. Advertising creatives have little time and would benefit from being presented with the 30 second element of a song that matches the query rather than be forced to listen to an entire song. When the human intermediary does the search s/he may know where in a piece the ‘build’ takes place and possibly will direct the User to this section of the music. Disintermediation could perform a similar function. Content-based retrieval tools that search music signals for Music Structural facets such as crescendos, solos, and specific instrument onsets would be of particular value in this area.

## 5. CONCLUSION

Anecdotal evidence suggests that, historically, although there is the will to disintermediate the process, there have not always been the resources or the technology. A number of MSEs were developed up to five years ago in a rush to compete for business. They have not all been updated to keep up with web and search engine technology, although there are exceptions with some services currently in re-development and not available for analysis.

It appears that although the Music Owners are designing search tools for Users who wish to search online [2] the possible mismatch between the Users’ approach and that of the Owners must be considered. If successful disintermediation of these services is to take

place then the Users and their contexts have to be considered in detail.

It may be that a 'global' search system may help the searchers who are time poor by saving them doing the same search on multiple services. However there are legal and business hurdles to this solution. Record companies may not use lyrics without permission – they are controlled by music publishers. Conversely, music publishers may not own the recordings of the compositions they control and would need permission to include them in their online catalogues. If we combine this problem with the fact that these services are designed for the exploitation of catalogue in a highly competitive industry then collaboration between Owners is difficult. However it is not unsurpassable. There is currently one service ([www.ricall.com](http://www.ricall.com)) which unifies a selection of client catalogues in an attempt to simplify the problematic element of the search process relating to Users having to use numerous interfaces for one search.

It is hoped that the long term value of this research is not only to the commercial users of creative search represented in this study, but to wider users in the general public who wish to choose music to accompany home videos, slide shows and presentations. Disintermediation of the search process is a reality and is a central aim of the retrieval community. We are interested in whether currently available MSEs, only available for commercial use, match real information needs of a small researchable group of Users. Our results are regularly circulated amongst the participants and also in academic and professional music information retrieval and library and information management circles in the hope that they benefit not just the commercial world but inform wider systems development.

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Brief 001 – 027 (2009) Private documents supplied by anonymous creative music searchers

## APPENDIX

An example of a publically available brief (Brief 009) follows, with coding tags. It is not possible to present all of the briefs under analysis as the participants asked that only anonymised extracts were published.

We are looking for a <MOOD> cool </MOOD> <MOOD> fun </MOOD> <TEMPO> > jaunty </TEMPO> and <MOOD><TEMPO> upbeat </MOOD> </TEMPO> track with a <MOOD> happy vibe </MOOD> and a certain <MOOD> feel good factor </MOOD> <MOOD> it shouldn't take itself too seriously </MOOD>. Ideally it should be from a <DATE> new </DATE> and <DATE> <CHART> up-and-coming </DATE> </CHART> <ARTIST> artist </ARTIST> ; [client] <MUSIC FUNCTION> would like to be associated with a <MOOD> fresh </MOOD> <DATE> new sound </DATE> </MUSIC FUNCTION>, and not with something <DATE> old </DATE> or <DATE> dated </DATE>.

<MUSIC FUNCTION> The music should guide us through the story and mirror the <VISUALS SUBJECT> positive journey the main character is taking </VISUALS SUBJECT> </MUSIC FUNCTION>. <VISUALS SUBJECT> He is in his own little world of

fun, which contrasts with the busy urban surroundings </VISUALS SUBJECT>. The music should be <MOOD> positive, </MOOD> <MOOD> easy going <MOOD> and <MUSIC FUNCTION> make the listener smile. </MUSIC FUNCTION>

Although the overall tempo of the song should be <TEMPO> upbeat </TEMPO> to <MUSIC FUNCTION> reflect the gliding motion of the journey, <MUSIC FUNCTION> <TEMPO> the pace should be varied, </TEMPO> and the track <MUSIC STRUCTURE> should have some <VOLUME> quieter </VOLUME> moments and enough space to accommodate <EXTRA-MUSICAL> sound effects <EXTRA-MUSICAL> </MUSIC STRUCTURE> –

<VISUALS SUBJECT> the character will be going down the slide at different speeds at different points, occasionally slowing down or even stopping. </VISUALS SUBJECT> <EXCLUDE> Please avoid </EXCLUDE> anything too <GENRE> folky </GENRE> or <MOOD> dreamy. </MOOD> Any <LYRICS> lyrics should relate loosely to the story of the ad, which conveys a positive journey. </LYRICS>

<EXCLUDE> Please avoid any songs with <LYRICS> specific lyrics, e.g. to do with driving a car.</LYRICS> </EXCLUDE>

