

## **Cognition, early polyphony, and interdisciplinary musicology**

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The *Journal of Interdisciplinary Musicology* issues from a series of conferences in which most papers represent two authors—one from a humanistic perspective and the other a scientific one. This collection of papers exists as a subset of papers shaped by those criteria. They were given at a workshop focused on the subject “Cognition of Early Polyphony” (University of Graz, April 2012) under the auspices of the European Science Foundation.

Over recent decades an increasing quantity of musicological scholarship has involved a systematic component. Yet the specific chemistry between humanistic and systematic elements is different in every case. Few guidelines exist to delineate the harmonization of diverse approaches into an easily comprehended whole. The reader of these contributions will notice a wide range of subjects. Cognition is treated flexibly enough to include perception and early polyphony liberally enough to include traditional music (an embrace that has existed since the dawn of ethnomusicology in the last years of the nineteenth century) in the contribution by Rytis Amvrazevičius. The work by Omigie, Dellacherie, and Samson on dissonance judgments is focused on perception with clear emphasis on early music but with also with a generous review of perceptual literature from the nineteenth-century onward. Pearce and Eerola include some Renaissance madrigal data with a broad range of later and traditional music in order to propose a predictive model of music perception, that is to hypothesize *how* earlier audiences heard the repertoires of their own times. Two papers deal exclusively with early repertoires. They are Rotter-Broman’s study of contratenor parts in polyphonic songs from the fourteenth century (*Trecento*) and Jürgensen, Pearson, and Knopke’s comparative study of compositional styles. It falls somewhat in line with Pearce and Eerola’s work, because it is considered from the listener’s point of view. However, the main focus of Jürgensen et al. is on Palestrina.

One question one might pose is where to situate such a spectrum of works in the broader terrain of musicological studies. Some interdisciplinary groupings have become recognized hybrid fields. Music perception and music cognition are two of them. Interdisciplinary musicology has no such well corralled terrain. It allows that any field of scientific or social-scientific bent can be allied with any aspect of music study to ferret out previously unrecognized phenomena.

To approach the problem of situating each offering within the wide scope in recognized bibliographical resources, we culled a sample of ten concepts that play a central role in these five studies. The most notable finding is that most of these terms and phrases score very few hits. As a group, these selections represents virgin territory. Some

combinations as used in titles find no matches at all. Searches were limited to title and abstract content in order to assure that the “hits” reported gave significant emphasis to the terms investigated.

JSTOR has recently introduced metadata it labels Data for Research (DFR, found at [dfr.jstor.org](http://dfr.jstor.org)), which enables users to search its holdings in unusual ways. DFR also facilitates profiling verbal criteria of the user’s choice against a timeline, the boundaries of which can be set by the user (as with time parameters in travel websites). JSTOR holdings date back to the mid-nineteenth century, although musicology did not come into being as a discipline until 1895, and journals accrued slowly.

DFR enables the timeline user to set arbitrary chronological bounds, although there was no advantage to doing that here. It uniquely allows users to pin down spans of usage, identify peak years of usage, and export any of its metadata in tabular formats for further analysis. See Table 1.

**Table 1.** Topical citations relevant to the articles following, from titles and abstracts of academic literature represented in the Arts section of JSTOR, compiled via the Data for Research (DFR) facility. Delimiters shown in parentheses were used in the searches.

	Total listings by subject	Initiation year	Peak year (through 2010)
Compositional style	1,323	1955	2001
Contratenor	1,493	1857	1987
Dissonance judgments	5	NR	NR
Music cognition	1,052	1980	2000
Music perception	2,730	1973	2009
Polyphony (music)	10,852	1881	1992
Predictive models (music)	145	1979	2008
Tonality	14,964	1868	1992
Tonality perception	0	NR	NR
<i>Trecento</i> (music)	2,068	1911	1993

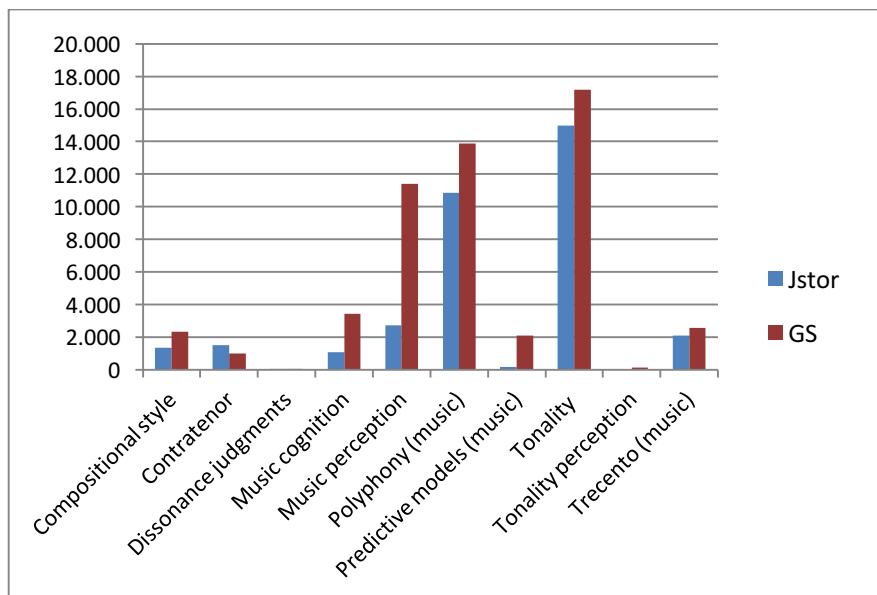
One will immediately notice that the terms used for search stretch from general to specific, but this simply reflects a similar spread in the research subjects themselves. That “tonality” appears more times than “polyphony,” and that both eclipse other topics by a considerable distance reflects the general end of the spectrum. To an undetermined degree, the differences in Col. 2 reflect also indicate the period of time over which literature has been accumulating (see Col. 3). “Polyphony” and “tonality” have the longest published history, music cognition the briefest though just slightly shorter than “predictive models”.

Although one could compute the number of entries per year (or even generate spreadsheets with one column per year for further computation), most of the terms show a decided peak rather than an even distribution, and in almost all cases except these two most general terms it is a recent peak. For “music perception” the peak year is unlikely to have been reached, because each year shows more relevant publications than its predecessors. “Polyphony” and “tonality” peaked in 1992, “compositional style” in 2001. Like “music perception”, the topic of “predictive models” may still be escalating. Overall, the range of topics presented here represents current and very recent thinking in most of the areas covered.

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Discovering literature in new fields of enquiry often requires (particularly for printed sources) consultation of one or more bibliographical resources. We investigated five other bibliographical collections and found, unsurprisingly, each had different merits. Pinning down individual strengths and weaknesses may enable researchers to find a broader readership through soliciting broader coverage in these databases.

Beyond JSTOR, we furthered our enquiry by evaluating each of the ten selected concepts in Google Scholar and in four other bibliographical data resources. Google Scholar is the gorilla in the room, mainly because it subsumes the contents of all the other resources, except RILM (which seems to shield its material from Google crawlers). After we filter out \*.htm and \*.html files (i.e. webpages), Google Scholar (GS) produced the largest number of hits for most terms. To evaluate its performance against the structured databases on which other resources rely is nearly impossible. GS includes widely heterogeneous material that may also include conference presentations, sound and graphics files, YouTube videos, mention in blogs and reviews, and much else. In other words, some of what is included may not be literature. It contains many redundancies because it subsumes almost all the JSTOR and HighWire material except very recent publications. Figure 1 shows GS to have more hits for almost every topic than JSTOR.



**Figure 1.** Comparative citations to ten relevant topics in titles and abstracts of resources in JSTOR and Google Scholar.

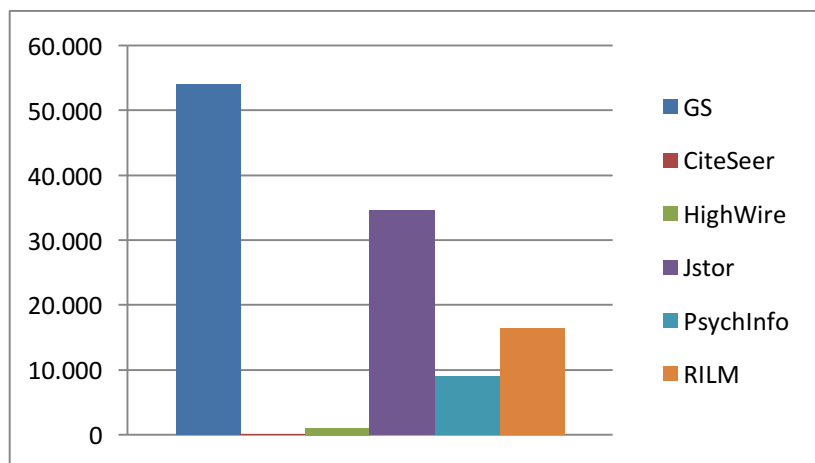
The most notable discrepancy between the two pertains to “music perception” and suggests that JSTOR has little coverage of acoustics and psycho-acoustical literature. More generally, though, GS statistics cannot be relied upon for statistics, since “hits” for a single publication may be counted several times over, as they are iteratively included in other data repositories.

This problem is compounded when we add citations from the four resources itemized below:

1. CiteSeer, an open-source citation index, rather than a bibliographical database. It is widely used as a springboard to scholarly literature in technical fields, but few subjects considered here find any mention in it. Much of the literature cited in CiteSeer is online only. Articles cited are available mainly behind paywalls involving membership or institutional licensing.
2. HighWire Press, an electronic publishing platform based at Stanford University and serving a wide array of mainly scientific fields, publishers, and academic societies. It offers the ability to search for titles, abstracts, and full-texts of all its holdings, although an increasing number of its full-texts require licensed access or pay-per-view.
3. PsychInfo<sup>1</sup>, a licensed-access bibliographical database of scholarly writings maintained by the American Psychological Association.
4. RILM, a licensed-access bibliographical database of writings in musicology.

<sup>1</sup> Searchable through Psycnet.

Since JSTOR, GS, and the last three are all based in the US, this cluster may not ideally accommodate the five studies presented here, which originate in Canada, Great Britain, and Europe. It is in general difficult to avoid biases toward English-language publications and therefore towards topics favored in Europe and North America. When GS is included, it completely dominates the entire roster of citations (Figure 2).



**Figure 2.** Total number of citations for all ten topics in six aggregate resources for academic literature.

Beyond GS, JSTOR clearly has the broadest reach across the subdisciplines represented here. It generally lacks works published in the previous 4-5 years because of a “rolling wall” policy promoted by publishers (in the interest of controlling exclusive access to their own digitizations). JSTOR’s retrospective holdings go back to the origins of the discipline of musicology (1895). HighWire claims content from as early as 1753, but it is most assuredly not in musicology. JSTOR increasingly includes scientific literature but not as comprehensively as HighWire, which began to include humanities literature only a few years ago.

For certain kinds of topics, the strengths of discipline-specific resources are worth noting. RILM, an independent entity, is widely used by musicologists when they are first investigating a new topic of research. It offers only titles and abstracts. RILM has the virtue of excellent, even extraordinary penetration across language groups from 1966 onward. It covers Slavic and some Asian languages as well as monographs detached from any serial production. It does not include work published before 1966. *PsychInfo* is more or less the analogue of RILM for the field of psychology. It provides titles and abstracts of all publications related to the field, as defined by a prescribed list of journals. *CiteSeer* issues from computer science and covers many technical fields. Its coverage does not coincide with most topics considered in the present context.

With GS excluded, the full roster of citations in Table 2 gives us a more nuanced view of the existing coverage of topics here.

**Table 2.** Distribution of coverage of ten selected terms in five bibliographical resources. Although HighWire and JSTOR support full-text downloads, the searches have been restricted to titles and abstracts. Top scores are in **bold** type, runners up in **bold italics**.

	CiteSeer	HighWire	Jstor	PsychInfo	RILM
Compositional style	3	288	<b><i>1,323</i></b>	8	<b>1,374</b>
Contratenor	0	<b><i>376</i></b>	<b>1,493</b>	0	68
Dissonance judgments	0	<b>21</b>	5	<b><i>20</i></b>	0
Music cognition	23	54	<b><i>1,052</i></b>	<b>1,790</b>	469
Music perception	32	98	<b><i>2,730</i></b>	<b>6,668</b>	1,760
Polyphony (music)	1	83	<b>10,852</b>	23	<b><i>5,896</i></b>
Predictive models (music)	7	1	<b>145</b>	45	4
Tonality	30	72	<b>14,964</b>	216	<b><i>6,151</i></b>
Tonality perception	1	17	0	<b><i>143</i></b>	<b>249</b>
<i>Trecento</i> (music)	0	5	<b>2,068</b>	0	<b><i>414</i></b>

JSTOR shows the same heavy preponderance for polyphony and tonality as GS (a tautology, given that GS subsumes JSTOR citations). It largely dominates most topics. PsychInfo is clearly the resource of choice topics in music perception and cognition. RILM runs second in both categories. (RILM may present a better synthesis for single-author publications.) RILM also has respectable coverage in compositional style and music perception.

What is perhaps most surprising in this table is the relatively high profile of fourteenth-century music terminology via the proxy terms “Trecento” and “contratenor”. JSTOR shines in both cases, and by wide margins over RILM. One relevant factor is evident from the DFR data: these specific topics enjoyed a golden era decades ago (thus being excluded from RILM) but additional studies have been accumulating ever since.

All in all, the articles before you are pioneering works in the interstices of subjects that are themselves of mainly recent gestation. As interdisciplinary musicology stares out at vast unsettled prairies of knowledge, it envisions exciting possibilities for cross-fertilization and continued growth.

## Biography

**Eleanor Selfridge-Field** works in several areas of digital musicology, both at Stanford University and in conjunction with the Packard Humanities Institute in Los Altos, CA. Her interests as a musical historian are concentrated in early modern music. She is the author of several books and several dozen articles.