Rating for thesis of Christopher Thorpe.
(Check only one; you may use a + or - sign as a modifier.)

No Honors

Cum

Magna

✓ Summa

Remarks:

Please see the attached 3 documents
- note to Prof. Shieber
- "Document A," my nomination of the thesis for a Hoopes Prize
- "Document B," a few critical notes

David Lewin — iv/10/98

Reader's Signature — Date

DAVID LEWIN

Reader's Name (printed)

PROF.

Reader's Title (printed)

TO: Stuart Shieber, DUS in Computer Science
FROM: David Lewin, Professor of Music (Theory)

April 10, 1998

RE: senior thesis of Christopher Thorpe

These are my comments as one reader of the thesis. (In Music, the principal adviser is one of the readers.)

As you see, I have graded the project "summa." My strong reasons for doing so are laid out in Document A attached, my nomination of Thorpe's thesis for a Hoopes Prize.

In Document B attached, I append a few critical notes on the thesis as it stands. I do not think any of these constitute serious enough objections to lower my appraisal of the thesis from summa, even to summa-minus. The thesis is enormously impressive as it stands, and these minor objections are easy enough to address, when the work is reformatted for eventual journal publication.

David Lewin

DOCUMENT A

I understand that Mr. Thorpe's project instances new and original ways to use Markov Models for tasks simulating human activities. I must leave it to Computer Science readers, to evaluate the extent and significance of that so far as their field is concerned. So far as musical tasks are concerned, his project is by far more musically successful, to my thinking, than any of the various published musicological or music-theoretical essays purporting to "imitate" this style or that. (Composers have also used a variety of Markov methods for original compositional purposes, but that is a different sort of task, not to be compared.) His project imitates Bach-style chorale harmonizations more successfully than a variety of published musicological or music-theoretical studies attempting to imitate "Bach style" through non-Markovian approaches -- e.g. expert systems, generative-grammatical methods, Schenkerian theory, and such. The success of Thorpe's investigation is due to his highly sensitive ear, his thorough and musicianly knowledge of the relevant musical literature, his alertness to the practical impact of music-theoretic categories (particularly as involves the interrelations of meter with pitch structure), and his computational ingenuity. The gist of this thesis should certainly be published in a forum available both to musicians and to computer-science types; I plan to help Thorpe submit the thesis, suitably reformatted, to *Computer Music Journal*, and I do not anticipate any problem in their accepting it. The apparent pedagogical implications of Thorpe's work particularly intrigue me. It can be read to suggest that a music student facing the task of harmonizing a chorale in Bach style will do best, after becoming familiar with typical cadence formulas, to become familiar with typical Bach "licks" basically involving three consecutive notes in the soprano against three consecutive notes in the bass, taking into account the context of strong-weak-strong or weak-strong-weak in the concomitant metric positioning. Gaining sensitivity to what happens from one metrically-strong beat to the next will help even more. Conspicuously missing from this scenario is any reliance on traditional conceptual constructs such as fundamental bass or figured-bass. Conspicuously missing as well is any reliance on more (soi-disant) "sophisticated" theoretical constructs such as "grammar" in a broad sense, or Schenkerian structuring. Those are startling and contentious pedagogical implications, and Thorpe's work thus poses a very creative challenge for music theorists and pedagogues who would like to believe differently, in one way or another. The challenge is all the more impressive because Thorpe's Markovian harmonizations sound so good, and so Bach-like. Even the early stages of his model have that quality a surprisingly large amount of the time, and the later stages are hard to distinguish musically from work by Bach -- other than by recognizing that Bach did not in fact write them.

The thesis arose from work Thorpe did his sophomore year within a graduate course I teach on mathematical models in music theories. The project has proved very difficult and very sophisticated, and he has persevered admirably over several years. I was on leave during the calendar year 1997; before and since that year I have met with him one-on-one for an hour a week, to discuss his results, problems, and achievements. So far as the work itself is concerned I have had absolutely no input beyond such critical review; the work is essentially completely original and independent on Thorpe's part, beyond the first suggestion he may have picked up from my seminar, that such a project might be worth carrying through.

David Lewin

LEWIN: nomination of Thorpe thesis for a Hoopes Prize

DOCUMENT B

A few critical notes on Christopher Thorpe's senior thesis.
To be read after Document A, my nomination of the thesis for a Hoopes Prize.

The formatting of the examples vis-a-vis the main text does not follow any standard convention I know of for musical scholarship. This really caused only one glitch for me, on Thorpe page 8, where the first reference the thesis makes to any music example is to "music example 12." Momentarily brought up short, one wonders what happened to the first eleven examples. However, as soon as one turns to the page headed "Musical Examples 1-30," the rationale of Thorpe's layout becomes clear. His example-labeling system is then easy enough to follow in itself, even though non-conventional. By two pages later in Thorpe's main text (page 10), one appreciates certain virtues in his system, specifically in the compactness with which he can put such references to examples as "1=2," " 7=9," and the like, to illustrate certain criteria for "equivalence" of phenomena. Still, when he reformats the thesis for publication, I would advise him to redo the relations between text citations and numerical example-labels, following some more conventional system for musical scholarship. Or else, he could put a short explanatory note in his preliminary material, explaining how he has formatted his examples. The preliminary material needs an explanatory note, in any case, to remind the reader that all music examples are grouped in Appendix B -- Thorpe's table of contents does indicate as much, but readers tend to flip by such information. (Another reminder that examples are in Appendix B, page 23, is not a bad idea at the very first reference to a musical example in the main text -- this could appear in a footnote there.)

For publication, I would also essentially omit Appendix A and its musical examples. The results are not at the level of sophistication attained by the two-voice modeling in the main body of the thesis. Thorpe recognizes as much by putting this material in an appendix, rather than in his main text. He would need more time to work out this project either to a commensurate level, or to a clear and well-defined "failure" (to attain such a level), that could then be discussed. Such work is yet to be done -- if indeed it is to be done at all. Thorpe could retain an Appendix A, but confine himself to describing the idea that occurred to him, his tentative procedures to extend his earlier work in that direction, and his relative dissatisfaction with the results so far. I don't think it adds anything to include musical examples illustrating at some length the specifics of the overall unsatisfactory behavior.

David Lewin
DAVID LEWIN

Rating for thesis of CHRIS THORPE.
(Check only one; you may use a + or - sign as a modifier.)

No Honors

Cum

Magna

Summa

Remarks:

Margo Seltzer 4/13/98
Reader's Signature Date

MARGO SELTZER
Reader's Name (printed)

ASSOC. PROF
Reader's Title (printed)

Summa

This thesis uses Markov Models to create bass lines for Bach Chorales. It is a wonderful example of what a joint concentration thesis should look like. It combines music and science and also exhibits a nice combination of theory and practice.

Chris discovered that simple Markov models did not provide adequate continuity to provide "pleasing" bass lines. To alleviate this problem, he designed a top-down, multi-level Markov-based strategy to implement the bass line in phases. The results are excellent!

The writing in the thesis is clear and written for both the musician and computer scientist (a daunting task).