Using the organ as a practice strategy while learning a fugue on the piano: An experimental study focusing on polyphonic listening

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The purpose of this study was to investigate the use of the organ as a practice strategy during the first stage of learning a fugue from the Well-Tempered Clavier by J. S. Bach with four undergraduate piano students. The study was divided into two groups: the Control Group, with two students[1] from the Universidade Estadual de Santa Catarina (UDESC) and the Experimental Group, from the Universidade Federal do Rio Grande do Sul (UFRGS), both in the two most southern states of Brazil. Conscientious contrapuntal listening of the distinct voices was the goal in order to better interpret and perceive polyphonic piano works. It was not our intention to emphasize technical issues, but to improve the perception of inner voices in a contrapuntal piece.

This study also aimed to elaborate learning strategies to reach this specific goal, validate recent research on learning strategies in general, as well as to contribute to the development of cognitive hearing in pianists while, at the same time, integrating these two instruments.

We have not found any research that alludes to this type of challenge, nor the benefits of the interrelationship of piano and organ as a learning strategy. Other studies of this nature including the piano and any other instrument have also not been found. The results of this study may contribute to the development of a new learning strategy, generating space for reflection on the relationship between empirical research and music.

Baroque music, in general, raises several issues as to its interpretation due to its stylistic characteristics and technical aspects. Memory lapses during performances are more prominent in polyphonic works, as is stated by Chaffin et al. (2001, 2002) in a case study with a concert pianist learning the *Italian Concerto* by J. S. Bach. Although memorization is not the focus of this study, the learning strategy proposed might prove to be helpful, since perfecting contrapuntal listening will automatically assist the aural memory. Organists, by the nature of their instruments, can generate a distinct timbre for each voice while practicing and our aim was to create this possibility among pianists. The case studies examined by Nielsen (1999, 2001) show that many of the musical and technical decisions made by organists during practice are influenced by the formal structure of the piece and by the self-regulation of this practice through the use of meta-cognitive strategies. This was also found in Hallam (2001) and Miklaszewski (1989). According to Lehmann et al. (2007, pp.78) "optimizing practice is mainly achieved through self-regulation. This means

[1] This experiment started out with 4 participants in each group, but in both cases, two dropped out during the first week. For the purpose of this article, we shall call each pair a "group".

that a person can select appropriate strategies, plan, monitor the outcome, and revise according to the difficulties encountered". In this context, our hypothesis is that the strategies elaborated could help the pianist to develop a better inner-listening which will also optimize the ability to self-regulate his/her own practice.

Method

The students chosen were undergraduate piano majors from two distinct universities: in each group one was in the beginning of the course and the other in middle. The requirements also included having already played at least one fugue from the Well-Tempered Clavier by J. S. Bach. The limited number of participants does not imply that the results will be less meaningful, since both groups are well balanced in their selective criteria. The results of this study will serve as a model for further ones with a greater number of participants.

The framework of the study was structured according to various phases, each with specific techniques:

- *Questionnaire and semi-structured interview:* a questionnaire was formulated to collect information in order to select the participants.[2] Afterwards, each participant was interviewed regarding their pianistic background;

- *Explanation of the formal structure of the selected fugue*: before the actual study began, each participant received a copy of the book "Contraponto Tonal e Fuga/Manual Prático"[3] [Tonal Counterpoint and Fugue/A Practical Manual] by one of the authors of this study. All were required to read the chapter about the fugue so that the variable "influence of the formal structure and general stylistic characteristics of a Baroque fugue" was maintained for both groups;

- *Protocol for instrumental practicing:* both groups received instructions on how to proceed with their practice sessions of *Fugue no. 2* of the Well-Tempered Clavier (vol. II) by J. S. Bach, a piece they had never heard nor performed. One of the researchers was present at the first session of the Experimental Group to teach them how to turn on/off the organ, and how to utilize the stops and separate manuals correctly;

- *Practice journal*: these were maintained at every practice session and included duration of practice, time of sessions, how/what they practiced, etc., and were collected weekly;

- *Video recording of practice sessions*: initial, intermediate and final practice sessions were recorded by each student for analysis and comparison;

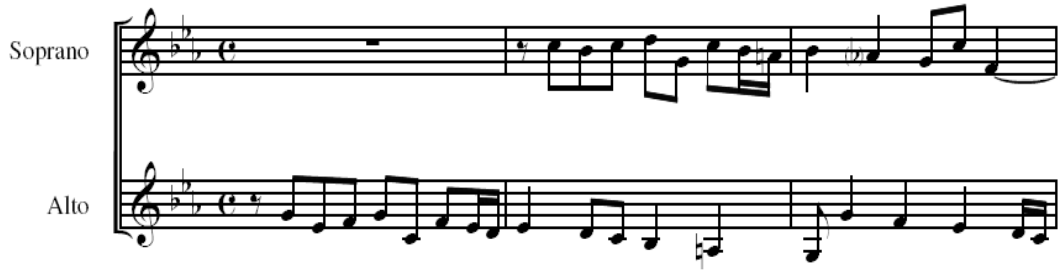
- *Application of experimental performance test***:** at the end of the study, the researchers applied experimental performance tests to both groups, to evaluate the capacity of the participants to dissociate between the contrapuntal voices.

[2] In order not to mix up the word "subject" of the study with that of the fugue, which is the work chosen, we decided to use the word "participants".
[3] Carvalho, Any Raquel. Porto Alegre: Novak Multimedia, 2002.

- *Final performance of the entire fugue:* each participant was asked to perform the fugue three times and to chose the one they preferred to be sent to external judges;

- *Evaluation of the final performance and experimental tests:* in order to maintain impartiality in the results, the final audio evaluation of these tests and the performance will be made by three external professional pianists who have had no contact with this study, to evaluate the capacity of each participant in performing the fugue in a clear, musical and organic manner, keeping in mind the interrelationship of the four voices. Technical dexterity and tempo will not be items they should evaluate.

Neither group was aided by their piano teachers. The Control Group practiced on the piano with the original score during the entire study, while the Experimental Group utilized only the organ for the first three weeks. They received the score written out in all of the two-voiced combinations, such as in the following example:



Ex. 1. Fugue No. 2 (vol. 2), Well-Tempered Clavier, mm. 1-3:
soprano and alto voices divided among two staves.

The students were instructed to practice the inner voices (alto and tenor voices) with a trumpet stop and the outer voices (soprano and bass) on another manual with a flute stop. After three weeks, they were allowed to practice on the piano with the original score, maintaining, however, at least one weekly practice session on the organ. In the final phase of the study, no practice restrictions were imposed upon the participants.

The experimental tests were divided into two parts. In the first one, the participants performed and recorded the fugue three times, in order to select the one preferred. The second part included the experimental tests, elaborated with the purpose of evaluating how the participants developed the inner listening of the contrapuntal voices throughout the learning process. Afterwards, each group was asked to fill out an evaluation sheet concerning the study.

At present, all data is being interpreted (video recordings, practice journals, interviews, evaluation sheets). Results from the first and second recorded sessions can been seen in the graphs below. The total time of each session, how long each one practiced the right hand only, left hand only, both hands, and how much time they spent examining the score, writing in fingerings and analyzing it (mental performance planning without playing), as well as not playing at all[4] make up these graphs. Graphs of the second session are presented only of the Experimental Group,

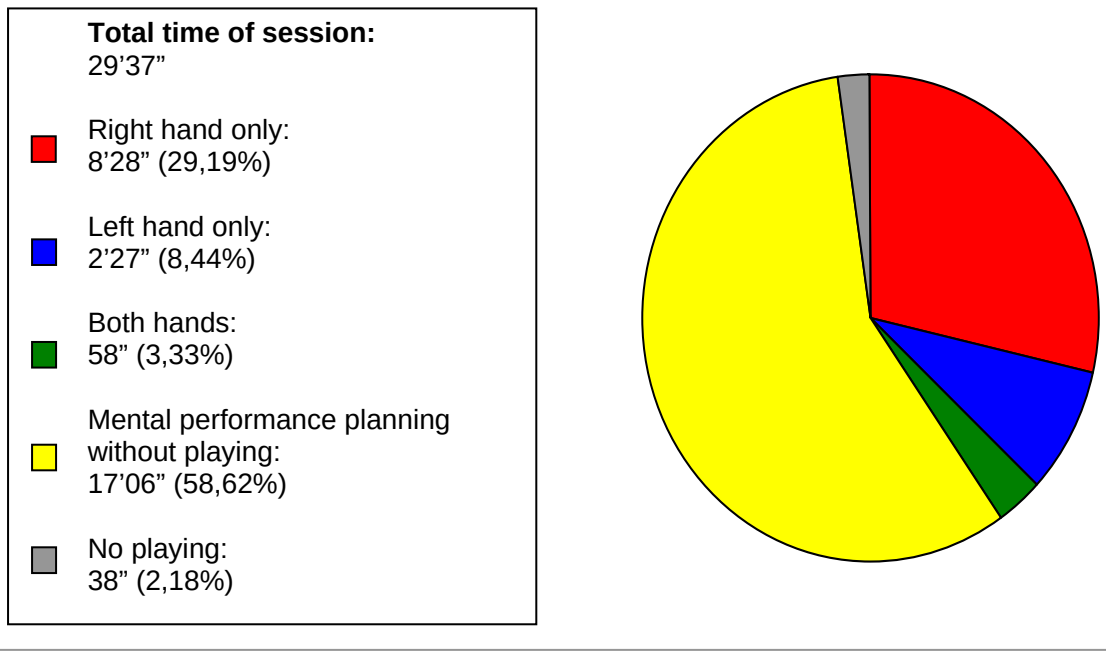
[4] This includes looking for the score or other materials, standing up to stretch, and any other actions which were not music-related.

since this was their first time practicing at the piano. The Control Group practiced on the piano throughout the entire study.

Control group: on the piano

The figures below show the results of Students A and B during their first practice session on the piano.

Time distribution during 1st practice session of Phase 1 – Control Group - Student A



Time distribution during 1st practice session of Phase 1 – Control Group - Student B

Total time of session:
53’51”

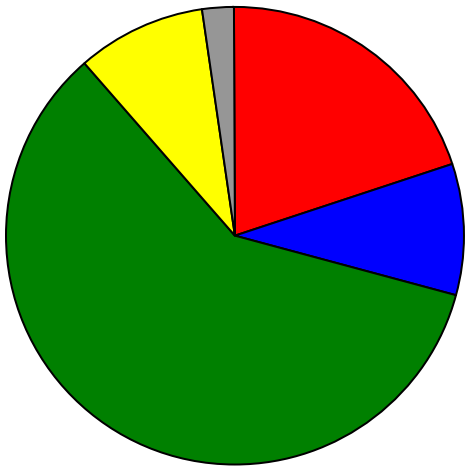
Right hand only:
10’43” (19,90%)

Left hand only:
4’57” (9,19%)

Both hands:
32’05” (59,57%)

Mental performance planning without playing:
4’50” (8,97%)

No playing:
1’16” (2,35%)



Discussion

In the Control Group, Student A spent more than half of the session mentally planning without playing, then spent more time playing right hand only. Student B, whose session lasted almost twice as long, played both hands the majority of the time, then right hand only and approximately the same amount of time playing left hand only and mentally preparing for performance without playing.

Experimental Group: on the Organ

The following figures show the results of Students C and D during their first practice session at the organ.

Time distribution during 1st practice session of Phase 1 – Experimental Group - Student C

Total time of sessions:
30'14"

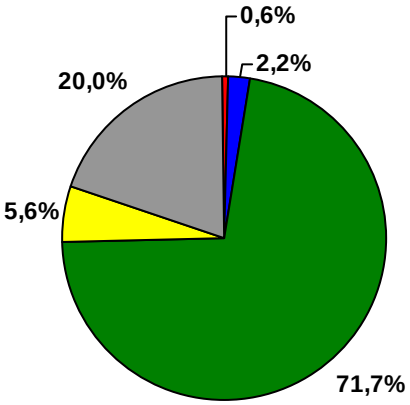
Right hand only:
0'10" (0,6%)

Left hand only:
0'40" (2,2%)

Both hands:
21'40" (71,7%)

Mental performance planning without playing:
1'41" (5,6%)

No playing:
6'02'' (20%)



Time distribution during 1st practice session of Phase 1 – Experimental Group - Student D

Total time of session:
29'59"

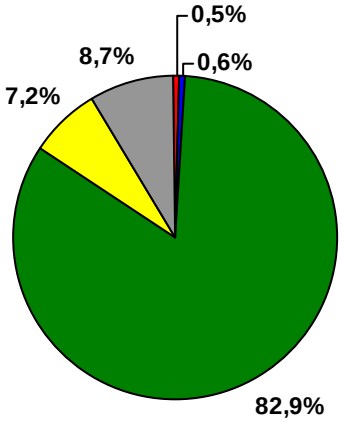
Right hand only:
10,5" (0,5%)

Left hand only:
10,5" (0,6%)

Both hands:
26'50" (82,9%)

Mental performance planning without playing:
2'19" (7,2%)

No playing:
2'49'' (8,7%)



Discussion

Both Students C and D in their first contact with the organ spent the majority of their practice session playing with both hands (on separate manuals, as instructed). Student C spent 20% of his/her time not playing, but getting adjusted to the instrument and environment. Both spent almost the same amount of time

mentally planning without playing and almost no time was devoted to hands separately. Their sessions lasted 30 minutes.

The following figures include the time distribution of the Experimental Group in Phase 2, when the participants received the original score for the first time and were now allowed to practice on the piano, provided they practiced once a week on the organ.

Experimental Group: first time on the piano

Time distribution during 1st practice session of Phase 2 – Experimental Group - Student C

Total time of session:
42’12”

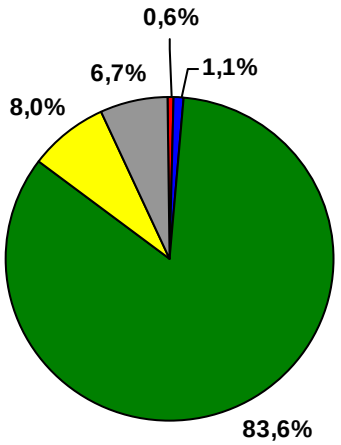
Right hand only:
0’15” (0,6%)

Left hand only:
0’29” (1,1%)

Both hands:
35’16” (83,6%)

Mental performance planning without playing:
3’23” (8%)

No playing:
2’49’’ (6,7%)



Time distribution during 1st practice session of Phase 2 – Experimental Group - Student D

Total time of session:
33’24”

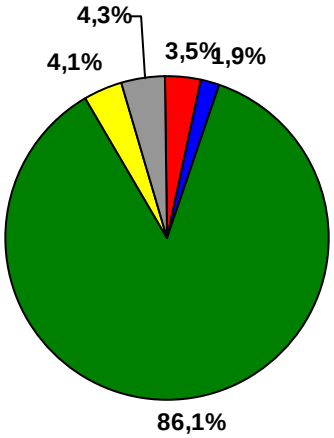
Right hand only:
1’10” (3,5%)

Left hand only:
0’39” (1,9%)

Both hands:
28’46” (86,1%)

Mental performance planning without playing:
1’22” (4,1%)

No playing:
1’27’’ (4,3%)



Discussion

Student C spent the majority of the time playing with both hands and then with mental performance planning. The duration of this practice session was 12 minutes longer than the first one at the organ, probably because of his/her familiarity with the instrument.

Student D spent almost the same amount of time playing with both hands as in the first session at the organ. The least time was devoted to left hand only. The session lasted only 3 minutes longer than the first. No dramatic changes occurred with the change of instruments.

The fact that both students spent most of their time at the piano practicing both hands (4 voices) was expected since before this they were playing only paired voices.

Conclusion

Phase 1 of this study shows that only one of all of the students (Control Group) spent more time analyzing and planning during his/her first contact with the fugue. On the other hand, the Experimental Group did not possess the entire score, only scores of paired voices, thus leading us to believe that this task would be almost impossible. However, when this group was faced with the full score for the first time, there was no change in their manner of practicing. The next step is to analyze if the organ strategies had any influence on the way the students perceived the voice interactions during their practice on the piano: did it facilitate their perception of the voices to the point that practicing hands separately in order to perceive the contrapuntal interactions became unnecessary? Does this process accelerate the learning process, performance control of the voices, and memorization?

Although much still lies to be done, preliminary results of data from other phases already imply that the use of the organ can be used as a practice tool with positive results, not ruling out other learning strategies.

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