

# EXPERT LEARNING IN THE DOMAIN OF JAZZ GUITAR MUSIC

*Stefan Degner*

*Andreas C. Lehmann*

Hochschule für Musik Würzburg, Germany

*Hans Gruber*

Universität Regensburg, Germany

## ABSTRACT

Although the acquisition of expertise and expert learning has been investigated in many different domains, we have only little information about the domain of jazz music performance, which seems to be more entrepreneurial than that of classical music.

In this study we try to adapt the notion of “deliberate practice” (Ericsson et al., 1993) to explain expert learning in jazz and compare it to the classical music domain.

Six expert jazz guitarists and twelve sub-experts (jazz guitar students) served as subjects. A biographical questionnaire was administered to obtain retrospective data about the subjects’ musical development, professional life and achievements, and amounts of deliberate practice at different stages of their development.

Results indicate that in general it is possible to adapt the notion of deliberate practice – previously developed in the area of classical music – to describe expert learning in the domain of jazz music. The main difference is that individuals here start their instrumental training relatively late, often lack the institutional support found in classical music, and therefore have to rely more on their intra-personal resources in attaining their goals.

## 1. BACKGROUND

### 1.1. Deliberate practice as and an explanation of expertise and expert performance

Amateurs in many domains fail to increase their performance over long periods of time. The explanation that Ericsson, Krampe, and Tesch-Römer (1993) offer for this phenomenon is that playful and work-type engagements in a domain have to be distinguished from goal-directed activities to increase one’s skill. The notion of “deliberate practice” defines this successful way of engaging in a domain. The authors claim that the long-term accumulation of deliberate practice activities in a domain contributes to the explanation of individual differences in final levels of performance. Deliberate practice activities are characterized by their effort, resource, and motivational constraints, and their exact nature depends on the domain under consideration. “Expertise refers to the cognitive, perceptual-motor, and physiological mechanisms that allow experts to attain consistently superior levels of performance on representative activities in their domains” (Lehmann & Ericsson, 2003, p. 79). These mechanisms are acquired through deliberate practice individuals, in particular

the relevant mental representations that allow them to respond appropriately to typical performance constraints in their domains and even to adapt to novel situations.

In their famous analyses of the skill acquisition of expert musicians at the music academy in Berlin, Germany, Ericsson, Krampe, and Tesch-Römer (1993) found that established and aspiring experts differed from amateurs and lesser experts in several respects. Experts were especially more involved in effortful training activities over a long period of time that solely had the purpose of improving performance.

### 1.2. The role of the teacher in musical skill acquisition

Expert teachers are important in music and are often mentioned alongside their famous pupils. Teachers who offer explicit performance goals, and provide feedback and opportunities for gradual improvement through repetition and correction of errors. Without them, it appears, individuals would only rarely engage in cognitively demanding deliberate practice, although they do recognise that it would improve their performance. In fact, Lehmann (2002) asserted that effort and enjoyment ratings of deliberate practice were negatively correlated in a sample of young expert musicians. Thus, a teacher has a guiding and motivating function in skill acquisition

Over time experts in all complex domains have accumulated a large body of experience organised in the form of knowledge and artefacts. Teachers share this body with learners and sequence the material such that the student will be able to master future skill demands. In doing that, expert teachers support learners in becoming fully enculturated in a community of expert practice.

Once experts possess all the necessary mental representation, we assume that they can become their own teachers by setting new goals based on what is known in the domain and by monitoring their practice effectively. This is the creative aspect of expert performance. Learning by experts is self-regulated, and they decide which parts of their skill need refinement or maintenance.

Interestingly, jazz musicians’ biographies do not emphasize the student-master relationships characteristic for classical musicians. Furthermore, the long hours of solitary practice do not feature quite as consistently as in classical musicians’ accounts. Thus, skill acquisition in jazz may be quite unique (Sloboda, 1991). Jazz has a less institutionalized and formalized instructional system compared to classical music. Some jazz musicians still doubt the necessity of formal jazz education offered by music universities and conservatories.

## 2. AIMS

In our study we tried to adapt the notion of “deliberate practice” (Ericsson et al., 1993) to explain expert learning in jazz, comparing it to the learning of classical music skills. We hypothesized that large interindividual differences in the biographical development would emerge (music university vs. selfstudy; taking lessons vs. transcription of recordings; concentrated practice vs. big amount of playing live, etc.).

## 3. METHOD

Two kinds of empirical research methods are most prominent in studies on expertise: the contrastive method (comparing experts and non-experts) and the retrospective method (analyzing the training history). We tried to combine both approaches, comparing jazz guitar experts to students of jazz music with regard to their skill acquisition. There is evidence that these retrospective estimates are valid and can sensibly complement cross-sectional methods (Ericsson et al., 1993; Krampe, 1994; Gruber, Weber, & Ziegler, 1996). The interview was our method of choice because the biographies of our subjects were heterogeneous and would not allow for a standardized survey.

**Interview.** The interview covered 11 topic areas and was organized chronologically (in many aspects our study follows the methodology pioneered by Ericsson et al., 1993). Pilot work had identified several episodes and phases that we systematically investigated:

- (1) Individual starts to play the guitar
- (2) Individual begins playing the jazz guitar
- (3) Phase when individual descides to pursue music as a professional career
- (4) Individual studies jazz guitar at the conservatory or academy
- (5) Present time

After talking about a particular phase subjects responded to a short survey concerning practice variables (e.g. “How many hours did you spend at that time in a normal week with your instrument?” “How many hours did you practice alone?” “Did you practice without your instrument?”). These questions were identical for each phase.

The main part of the interview focused on specific aspects of the subjects’ musical biography such as school and education, instrumental teaching and learning, jazz music, and stylistic development.

Also, subjects rated each of 12 given practice activities (e. g., “practice alone”, “practice with others”, “taking lessons”) on two dimensions; first the importance of the activity for improving performance on the guitar and second the effort required to perform the activity. Finally, from a list of 24 jazz activities (adapted from Coker, 1990) the jazz guitarists were to choose those eight activities that they considered to have been most relevant for improvement in performance. These eight chosen activities were then rated for relevance and effort.

**Subjects.** Institutional criteria were used to differentiate between subjects ( $N = 18$ ). Sub-experts were subjects currently studying jazz guitar at a music university or conservatory ( $n = 12$ ). They were enrolled at the “Hochschule für Musik Nürnberg”, the “Hochschule für Musik Würzburg”, or the “Richard Strauss Konservatorium München”. Experts were subjects who were (a) teachers for jazz guitar at a music university, conservatory, or local music school and (b) well-established as musicians in the local jazz scene ( $n = 6$ ). They were teaching at the “Hochschule für Musik Nürnberg”, the “Hochschule für Musik Würzburg”, or at well-known music schools in Regensburg. The average age of the experts was 38.8 ( $sd = 4.7$ ), that of the sub-experts 25.6 ( $sd = 1.9$ ).

**Procedure.** The interviews took place in various locations and lasted around one hour. The sequence of questions was flexibly adapted to the course of the interview. The interviews were recorded on mini disc and later partially transcribed. Throughout, the interviewer took notes.

In order to improve the subjects’ biographical memory we developed a table indicating the age of the subject on the Y-axis and biographical variables such as “school and education”, “music study”, “taking lessons” on the X-axis (see also Krampe, 1994). As we proceeded along this time line, many pieces of information were directly written onto the sheet, allowing the subjects and the interviewer a good visual representation of biographical and developmental aspects. Additional information and answers were recorded on prepared forms and sheets of paper.

## 4. RESULTS

**Ages and phases of skill acquisition.** As a group, subjects began playing the guitar at the age of 13 years ( $n=18, s=1.9$ ). While the sub experts started at the age of 12 years ( $sd = 1.0$ ), the expert group started later at about 14 years ( $sd = 2.8$ ). In comparison, Ericsson et al. (1993) reported that classically trained subjects started playing their instruments at the age of 8 years. The expert group started to take formal lessons with a teacher at the age of 18.5 ( $sd = 1.6$ ); the sub experts began instruction at the age of 13 ( $sd = 3.1$ ). This difference was significant and may be due to the changes in the system of jazz music education (in Germany). All started to play jazz music only at the age of 20 ( $n = 18$ ).

Ericsson et al.’s (1993) subject started to receive lessons with a teacher when they started playing their instruments. None of the subjects in the present study received professional instruction when they started their instrument. Expert subjects had not received instruction for as long as the sub-experts. And although this difference was not significant, sub-experts were still taking lessons at the time of the interview, thus even increasing the difference in length of formal training.

Contrary to violinists and pianists who tend to play classical music from the start, our subjects were not performing jazz music when they began to play the guitar. At the time, subjects were playing Rock and Roll, Funk or Folk music.

Concerning the sequence of phases it is important to note that 5 out of 6 experts decided to become a professional musician after beginning to play jazz, whereas 11 out of 12 sub-experts decided to become professionals before they started playing jazz

intensively. While the experts noted that their fascination for jazz music was the main reason to start playing, 8 of the 12 sub-experts claimed that playing jazz was necessary in order to get access to higher music education.

**Practice habits during different phases.** Next, we investigated the amount of the subjects' weekly practising at the five different phases of skill acquisition. Significant differences between expertise groups were observed for the start of playing the jazz guitar (Phase 2) and for studying jazz guitar at the academy (Phase 4). Experts engaged in effortful practice activities for about 27.2 hours ( $s = 15.5$ ) per week, whereas the sub-expert group averaged only 15.8 hours ( $s = 10.4$ ) with practising alone. During their time at the academy (Phase 4), experts accumulated 43.2 weekly hours ( $s = 17.6$ ) the sub-experts only 17.4 hours ( $s = 10.8$ ). In sum, experts had practised much more than sub-experts.

**Importance and effort of practice activities.** Table 1 shows the rankings of the most important domain activities by our subjects, separately for experts and sub-experts. For comparison, data reported by Ericsson et al. (1993) for classical musicians are included. Despite the many resemblances across domains, it is noteworthy that listening to music by others is stressed by jazz but not by classical musicians. Contact with a teacher („Taking lessons“) is an important part of the deliberate practice notion in classical music. Yet, jazz experts consider it far less important for their skill development. As expected, „practice alone“ was chosen by all groups as the most important activity for skill acquisition.

There are at least three theoretically important activities in learning to play jazz and those are practicing alone, taking lessons, and playing in sessions. Table 2 shows the importance and effort ratings these activities received. Sub-experts rate the importance of lesson taking and the effort involved in individual practice significantly higher than experts.

Importance	Jazz Experts	Jazz Sub-experts	Classical musicians
1	Practice alone	Practice alone	Practice alone
2	Performance on stage	Listening to music by others	Taking lessons
3	Practice with others	Taking lessons	Solo performance
4	Listening to music by others	Practice with others	Practice with others
5	Play at sessions	Performance on stage	Listening to music by others

**Table 1:** Ranking of importance of musical activities for experts and sub-experts jazz guitarists; rankings by classical musicians from Ericsson et. al. (1993) are included for comparison. (Note: Lower ranks indicate higher importance).

A related interesting finding was that whereas all experts started very early to play in sessions, more than half of the sub-experts had not even started playing in sessions at the time of the interview.

	Experts	Sub-experts	t-test (df=16)
Importance	5.8 (2.6)	7.4 (3.4)	n.s.
<b>Play in Sessions</b>			
Effort	7.8 (3.0)	4.6 (3.5)	(*)
Importance	7.3 (3.8)	3.8 (2.5)	*
<b>Taking lessons</b>			
Effort	5.5 (3.8)	4.9 (2.3)	n.s.
Importance	2.0 (0.9)	2.6 (2.3)	n.s.
<b>Practice alone</b>			
Effort	5.7 (3.2)	2.8 (1.9)	*

**Table 2:** Importance and effort for 3 important deliberate practice activities in jazz music: Mean rankings and standard deviations (in parentheses) of experts and sub-experts. T-test of mean differences for independent samples. (Note: Lower values indicate higher importance or larger effort, respectively. \*:  $p < .05$ ; (\*):  $p < .10$ ).

Table 3 shows the ranking of most effortful domain activities for experts and sub-experts. The data reported by Ericsson et al. (1993) for subjects in the classical music domain are included for comparison. There are again differences between experts and sub-experts when ranking the effort of practice alone. Important indicators of deliberate practice (e. g., practice alone and taking lessons) are rated as less effortful by the expert group. While practice alone was the most important activity for improving one's skill for all subjects (see Table 1), only for the sub-experts is it also the most effortful.

Effort	Experts	Sub-experts	Classical musicians
1	Giving lessons	Practice alone	Solo performance
2	Organisation	Giving lessons	Taking lessons
3	Performance on stage	Performance on stage	group performance
4	Professional conversations	Taking lessons	Practice alone
5	Taking lessons	Practice with others	Giving lessons

**Table 3:** Ranking of effort exerted in musical activities for experts and sub-experts; rankings by classical musicians from Ericsson et. al. (1993) are included for comparison. (Note: Lower ranks mean larger effort).

Subjects had ranked 24 deliberate practice activities suggested by a master teacher (adapted from Coker, 1990). These ratings proved difficult to analyze. Therefore, only the most mentioned items will be reported here: "Playing intervals and arpeggios" was selected most often; "Transcription, analysis, and performance of solos by well-known musicians" and "improving phrasing and tone" were selected next, followed by "enlarging one's repertoire".

## 5. CONCLUSIONS

Most research regarding expert music performance has been in the area of classical music (see Lehmann, 1998, for a review). Only few singular studies have attempted to understand skill acquisition in jazz. In this study we have interviewed professional and advanced student jazz guitarists to gain some preliminary insights into their musical development and associated training variables.

The most striking finding was that they started their instrument relatively late compared to classical musicians, and that their start of playing the instrument was not associated with taking formal lessons. Gruber et al. (1996) documented that oftentimes classical musicians start to play their instruments because the parents want them to, not because they themselves want to. In our sample the subjects were old enough to make their own decisions based on their interests.

The late start of formal lessons seems to be typical for the domain of jazz guitar playing. Up to this point they seem to receive their knowledge and skills in informal settings similar to popular musicians (Green, 2002). Also, they receive this musical experience with styles other than jazz. Once they come in contact with jazz or decide to become professional musicians they start to acquire jazz-specific skills. At this point they engage intensively with the style and practice heavily. Both the late start of playing the instrument and taking of lessons does not fit the general findings in previous studies on expertise and deliberate practice in (classical) music. In spite of this late blooming, our expert subjects managed to become professionals.

The sub-expert group also ranked "taking lessons" higher than the expert group and began with formal lessons earlier. One reason may be today's more developed teaching system of jazz guitar playing. When the experts began to play, there were fewer possibilities for guitarists to obtain formal instruction in music schools. Therefore, they had to rely more on other resources.

As our interviews and the importance ratings suggest, the role of teachers (setting goals, error correction and instruction) for reaching high levels of performance in the domain of jazz is less clear than in classical music. As the pedagogical literature and Sloboda's (1991) description of Louis Armstrong's biography suggest, other sources of instruction are available: listening, analysing, and transcribing of recordings of famous musicians as well as playing in sessions. As a consequence, subjects have to rely more on their intrapersonal resources and entrepreneurial instincts in attaining their goals.

There is a conspicuous difference between experts and sub-experts with regard to the amount of practice during the phases of beginning to play jazz music and studying at the academy, when experts seem to have been practicing considerably more than the

aspiring experts. The experts also consider practice comparably less effortful. While this would require more phenomenological research, we may speculate that experts have a greater emotional bond towards their instrument and practice. Remember that all experts mentioned their fascination with jazz music as the reason to start playing, while only one of the sub-experts said so. Thus, amount of practice could have to do with how different musicians are motivated to practice or how they define the term. Sloboda, Davidson, Howe and Moore (1996) suggested that higher achieving subjects in their sample also played more informally on their instruments than less successful peers. Since deliberate practice is a concept that is only estimated by various indicators – among them practice alone – estimates of "practice alone" may include actual deliberate practice as well as informal playing for enjoyment.

In sum this study suggested that the concept of deliberate practice – previously developed in the area of classical music – can be applied to jazz guitar performance. Skill acquisition also proceeds in stages of increasing professionalization. However, the jazz musicians investigated here started their instrumental training relatively late, and especially older respondents had often lacked the institutional support found in classical music. Recent changes in the educational systems to more formalized settings were mirrored in the subjects' rankings of relevant activities such as "playing at sessions" and "taking lessons". Although there are still some open question concerning practice times, the findings do match findings reported by other authors regarding the skill acquisition in musical areas outside classical music.

## 6. REFERENCES

1. Coker, J. (1990). *How to practice jazz*. New York: Jamey Aebersold Jazz.
2. Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, 100, 363-406.
3. Gruber, H., Weber, A., & Ziegler, A. (1996). Einsatzmöglichkeiten retrospektiver Befragungen bei der Untersuchung des Expertiseerwerbs. In H. Gruber & A. Ziegler (Eds.), *Expertiseforschung. Theoretische und methodische Grundlagen* (pp. 169-190). Opladen: Westdeutscher Verlag.
4. Krampe, R. T. (1994). *Maintaining excellence. Cognitive-motor performance in pianists differing in age and skill level*. Berlin: Sigma.
5. Lehmann, A. C. & Ericsson, K. A. (2003). Expertise. In L. Nadel (Ed.), *Encyclopedia of cognitive science, Bd. 2*, (pp. 79-85). London: Macmillan.
6. Lehmann, A. C. (2002). Effort and Enjoyment in Deliberate Practice: A Research Note. In I. M. Hanken, S. G. Nielsen, & M. Nerland (Eds.), *Research in and for music education. Festschrift for Harald Jørgensen (=NMH-publikasjoner 2002:2)* (pp. 153-166). Oslo: Norwegian Academy of Music.

7. Lehmann, A. C. (1997). The acquisition of expertise in music: Efficiency of deliberate practice as a moderating variable in accounting for sub-expert performance. In I. Deliège & J. Sloboda (Eds.), *Perception and cognition of music* (pp. 161-187). Hove: Psychology Press.
8. Sloboda, J. A. (1991). Musical expertise. In K. A. Ericsson & J. Smith (Eds.), *Toward a general theory of expertise* (pp. 153-171). Cambridge: Cambridge University Press.
9. Sloboda, J. A., Davidson, J., Howe, M. J. A., & Moore, D. (1996). The role of practice in the development of expert musical performance. *British Journal of Psychology*, 87, 287-309.
10. Green, L. (2002) *How popular musicians learn*. London: Ashgate.