Chapter 5
How We Hear and Experience Classical, Computer, and Virtual Music

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ABSTRACT

This chapter examines occurrences and events associated with the experience of composing, playing, or listening to music. Discussion of popular music and computer music begins the chapter, including issues pertaining the tuning systems, digital interfaces, and software for music. It then recounts an experiment on the nature of pitch and psychoacoustics of resultant tones.

INTRODUCTION

It is typical of us to assume that when we perceive things with our senses, we just take in things as they are, and we understand them using their nature as a basis. We just perceive things as they are and then we work with them, and lead our lives with them. The problem with this concept is that the nature of the things we perceive never reaches our brains. Our senses convert incoming sensations into neural impulses and then the neural impulses carry information about the world to our brains. There are various codes that stand for the characteristics of things, and the neurons are set up to detect things and then send information to our brains by means of these various codes. Neural impulses that travel up to our brains resemble the pulses that travel around in computers. They are not the same, however, because they are not digital in the sense that they do not code for numbers. They code for various things: edges, shapes, colors, pitch, loudness, saltiness, etc.

Learning before birth and also immediately after birth is traditionally called Imprinting, to distinguish it from the intellectual type of learning that will take place years later. Imprinting has been extensively studied in animals and birds and has been extensively documented. Konrad Lorenz (1937), probably the best-known researcher on imprinting, defined imprinting in his classic studies on graylag geese and other animals as the rapid learning occurring in early stales of life. Obviously, animals, and humans too,

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are capable of learning some things around the time of birth and before. This type of learning is usually said to be subcortical because it takes place in lower parts of the brain than the cerebral cortex, which is rather undeveloped at this stage of life.

This chapter tells about the ways we experience music, how our brain perceives pitch, and discusses the role of its early development in the perinatal period.

CREATING POPULAR MUSIC WITH COMPUTERS

The new generation of popular music (that teenagers listen to) is not guitar-based, as young people no longer desire to play guitar. The new popular music features a young generation of singers, but the accompaniments is created in recording studios with keyboards, workstations, and various types of MIDI controllers capable of producing a wide variety of electronic sounds. All of these devices are, in fact, computers. Thus, the music they are creating is computer music. Figure 1 presents a studio comprising old and new music technologies.

Computer music has been around for 50 years but the popular musicians have generally resisted it. Possibly, the change at this time has to do with intonation – the general pervasive adoption of equal temperament tuning. The change seems to have been initiated by the extensive use of auto-tune software that made it possible to correct the intonation of singers or instruments. Such software made it possible for all vocal and instrumental intonation to be corrected to precise equal temperament, something that can only be accomplished with computers.

Figure 1. The author's studio with a collection of hardware, software, and interfaces for creating music (2015, © A. Ursyn. Used with permission)