comparing notes

how we make sense of music

ADAM OCKELFORD

PROFILE BOOKS

First published in Great Britain in 2017 by
PROFILE BOOKS LTD
3 Holford Yard
Bevin Way
London WC1X 9HD
www.profilebooks.com

1 3 5 7 9 10 8 6 4 2

Typeset in Caslon by MacGuru Ltd

Printed and bound in Great Britain by Clays, St Ives plc

A CIP catalogue record for this book is available from the British Library.

ISBN 978 1 78125 603 9
eISBN 978 1 78283 231 7

Contents

PRELUDE

Insights from the Blind

HOW DOES MUSIC WORK? How does it make sense and what does it mean?

Seeking answers to these seemingly innocuous questions has preoccupied me for the last three-and-a-half decades. The genesis of my search can be traced back to the time when I first began working as a volunteer at Linden Lodge, a residential special school in London, in the late 1970s. All the pupils were blind or partially sighted and an increasing number of those recently enrolled, I was informed, had a range of learning difficulties too (many of whom today would be described as being on the autism spectrum). Little wonder, then, before my first visit to Linden Lodge, that I was warned not to be surprised if the youngsters I encountered had delayed or aberrant language, and were unable to initiate or sustain a conversation, sometimes repeating words or phrases over and over again with no apparent meaning (exhibiting so-called 'echolalia'). Don't assume that they will understand what you say, I was advised, and expect some to show more of an interest in the sensory qualities of everyday objects than their function: tapping bowls and drinking glasses to make them ring, for example, and repeatedly

pressing the same button on 'speak and spell' games, rather than trying to produce words.

Given accounts like these, my assumption before visiting the school had been that the main challenge in working with the pupils would be in reaching down to their modest levels of musical accomplishment from the rarefied heights of my life as a student at the Royal Academy of Music. I had recently performed Bach's celebrated Italian Concerto on the harpsichord and taken the lead role in Mozart's elegant Oboe Quartet, K. 370; I was in the midst of analysing Beethoven's esoteric late Piano Sonata, Op. 110; and I was getting to grips with composing in the terse style of the first movement of Bartók's 4th String Quartet. In the previous year I had won prizes for keyboard harmony, music theory, and for my contribution to a performance of an oboe trio by the recherché French Baroque composer, Joseph Bodin de Boismortier.

Confident in my knowledge and abilities, honed through countless hours of study and practice, I imagined that I would be able to engage the children in some relatively unsophisticated musical activities (maybe joining in with well-known songs, playing hand-held percussion instruments and the like). Then after a couple of years or so, I would tactfully move on, freeing up my evenings once more to pursue a career doing 'proper' work as a professional musician.

But I was wrong. On both counts.

* * *

On my first evening at Linden Lodge, I was shown round by Paul Ennals, later to be knighted for services to children as Chief Executive of the National Children's Bureau, but more significantly then the mobility officer at the school, whose job was to teach the pupils how to move around safely using a white cane. Paul also happened to be a competent amateur musician and my landlady's son, and it was through this connection that he had cajoled me into coming along to meet these 'amazing kids' with a gentle insistence that eventually eroded my increasingly tenuous excuses to be elsewhere. So, here I was, politely hiding my scepticism as he pushed open a door onto a rather dingy, narrow corridor that the

fading autumnal light was barely able to penetrate. (I remember thinking that lighting probably wasn't a priority at the school.)

In the gloom I managed to make out three or four doors on the left. From the first there emanated the strains of what sounded like early twentieth-century piano music. Was it late Frank Bridge, I wondered? Or maybe even Scriabin. The series of complex chords high up on the keyboard continued. Whoever was playing them was doing so with great finesse. Paul had said that there were one or two good musicians on the staff at Linden Lodge, but even so I hadn't been expecting this level of sophistication.

There was a click as Paul opened the door, and the playing stopped abruptly. It was even darker in the practice room than in the corridor. Very odd, I thought. Without saying anything, Paul flicked on the light switch.

I was astonished to see not an adult, but the diminutive figure of a boy on the piano stool. He couldn't have been more than 10 or 11 years old. He didn't turn round to greet us, nor did he say anything. I was immediately struck by the fact that his eyes appeared to be roving randomly without fixing on anything. I knew that I would always remember this, my first encounter with a blind child. Curiously, he was shaking with what appeared to be silent laughter or excitement, or maybe both.

Paul's voice reached out to him, as though putting a reassuring hand on his shoulder.

'Hi Anthony, it's Paul. And here's Adam.'

The boy didn't respond, but stood up and shuffled tentatively towards the window, and ended up, somewhat disconcertingly, facing away from us. He gave me the sense that by vacating the stool one of us was expected to take his place.

I wanted to say something, but, suddenly overcome with embarrassment, found myself bereft of speech. Paul must have sensed my discomfort and (as he always did) effortlessly picked up the thread of our conversation.

'I told Anthony you're keen on twentieth-century composers,' he said, managing to speak for the pair of us – and to us both – at the same time.

'Right.'

It suddenly dawned on me that Anthony must have been waiting for my arrival, and that the Bridge-cum-Scriabin was intended as a welcome to Linden Lodge. He still didn't say anything, but the shaking of his upper body grew more intense. I felt a prickling sense of expectation, but was tongue-tied once more.

Again, Paul came to the rescue: 'And I said you might play something for him.'

I hastily considered what would make an appropriate offering based on what Anthony had played for me. The idiosyncratic opening of Liszt's Piano Sonata in B minor came to mind. I sat down and, after a moment to gather my thoughts, set off with the quiet, *staccato*, open-octave Gs. Then came the contrast of the brooding, tonally ambiguous descending scale, which broke off, disconcertingly, leaving the expected bottom note hanging, unheard, in the air.

A moment's silence.

Out of the corner of my eye, I noticed that Anthony was now standing motionless, apparently listening with rapt attention. I took this as a positive sign and, feeling a newfound engagement with the music myself, I closed my eyes and focused on the sound of the next notes: two further hesitant Gs in octaves, sotto voce. Then another lugubrious scalar descent, this time with additional chromatic twists that deepened the sense of foreboding. Again, the melody halted prematurely, with the anticipated lowest note remaining unplayed, charging the silence that followed.

A moment's repose, and then my hands started to move in readiness for the last two detached strokes of the slow introduction. But I was interrupted by a jolt on my left arm and, looking round, I was surprised to see that Anthony had unobtrusively made his way back towards the piano stool. Having found me he didn't stop: the nudge turned into a shove, and it became evident that he wanted me to stand up so that he could take over. I obliged.

'There you go,' I said, trying to sound cheery. In reality I was a little disappointed; maybe the Liszt hadn't gone down so well after all.

But I was wrong. And what happened next was to change for ever the way I thought about music.

I watched, intrigued, as Anthony's hands deftly felt over the keys,

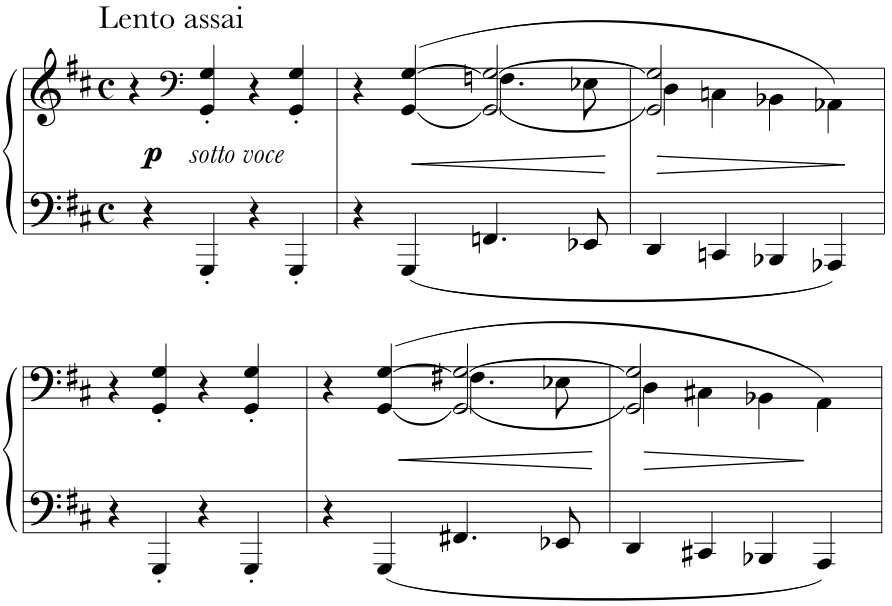

Figure 1 *The opening bars of Liszt's Sonata in B Minor.*

using the asymmetrical pattern of black notes as points of reference, and came to rest on the opening Gs of the Liszt sonata. A moment's pause and then the two tones sounded, hushed and terse, exactly as I had played them. Just like a recording. It was uncanny. The first descending scale followed flawlessly; sombre and introspective. Then the reprise of the Gs and the second scale, quirky chromatic inflections reproduced perfectly, the final discontinuity impeccably timed. Anthony had captured both the notes and the mood of the music precisely. He stopped at exactly the same point that I had, and remained completely still, as though waiting for more.

I was transfixed. How was it possible for a boy who was blind and (I assumed from his lack of verbal communication) had learning difficulties to play this sophisticated music after hearing it only once? Anthony couldn't have seen what I had done and yet he had just reproduced the introduction to the sonata, naturally, fluently, without prompting. It wasn't merely the fact that the notes were correct: he seemed to have an effortless, mature understanding of the music, with an intuitive feel for the unfolding emotional narrative.

Figure 2 *Anthony playing* Summertime *at a concert for a Wandsworth Primary School in the early 1980s to my bewhiskered accompaniment, while members of the Linden Lodge singing group (led by their teacher, Kevin Deegan, off to the right) listen intently.*

But above all, and although I couldn't (yet) bring myself to tell Paul, I knew that, in spite of my advanced musical training and thousands of hours of practice, I would have struggled to do what Anthony had just achieved, apparently with little or no effort at all.

* * *

In the days and weeks that followed, I tried to rationalise what I had seen and heard. I asked Paul to fill me in on Anthony's background. If I were to work with him purposefully, I felt I had to have some knowledge (if not understanding) of the extensive musical journey that he must already have made in the first decade or so of his life.

Largely through the tireless efforts of his mother, and the enthusiasm of the music teacher at his previous school, Rushton Hall in Northamptonshire, Anthony had had tuition on a range of instruments from an

early age, including the piano, the drums, the recorder, the saxophone, the clarinet – whatever came to hand, it seemed. Given the option, as a small child, he would spend all his waking hours engaged in making music in one form or another. Paul was of the view that while he was unusually talented among the children at Linden Lodge, his ability to learn music quickly, to play by ear and to improvise – alone and with others – was by no means unique. Like them, Anthony's knowledge of music theory was elementary, and he was unable to use the Braille version of music notation to read or write what he could play. As far as he was concerned, music functioned like a natural language, that for him was more powerful, more persuasive, more authentic than words. No one had taught him to understand how that language worked; mere exposure to music had been enough. And, Paul assumed, experimenting with instruments for countless hours, encouraged by the adults around him, who, having no comparable experience to draw on, could only follow their instincts, had proved sufficient for Anthony to learn to use music as a form of expressive communication.

I was fascinated by Paul's account of how Anthony had come to engage with music so effectively, though in my mind it raised more questions than it answered. How could it be that a young boy who was blind and had learning difficulties had developed more advanced musical skills than many of the students at the Royal Academy of Music?

As someone who had been taught to perform, improvise and compose through years of structured tuition, I had assumed that this was the only way that musical skills could be acquired, passed on painstakingly from one generation of musicians to the next. But evidently not. So what did Anthony's example say about the way that people develop the capacity to engage with music?

Clearly, for this person at least, music made sense without any verbal explanation. Therefore, I reasoned, it must be possible to come to understand the rules governing the way music works just by listening; they must be self-evident. That is, without prompting and without recourse to any other information, the brain (or, at least, Anthony's brain) was able to fathom how music functions, and through that understanding attribute meaning to abstract patterns of sound. What an incredible thought! It

implied that a series of notes, each of which in itself apparently signified nothing, could somehow evoke thoughts and feelings beyond their perceptual qualities as sounds. How could this be?

* * *

Seeking answers to these questions has intrigued thinkers across the ages, from Socrates to Schopenhauer: why is it that abstract patterns of sound that don't mean anything in a literal sense actually mean so very much to us as human beings? Indeed, in Western societies, we are bombarded with music for around half our waking moments.[1] In shops, during advertisements on the radio, television or online, in the dentist's waiting room or as the plane taxis prior to take-off – music is there to influence the way we think, feel and behave. Why? Because, as every filmmaker knows, music is unique in its power for stirring the emotions, without listeners even needing to be aware of its presence. And, as music therapists' work with dementia patients and autistic children has shown, music has the capacity to plumb the depths of the mind and tap into memories (happy, sad, profound or everyday) that words alone are not able to touch. The sheer beauty of music can make grown men and women weep. Some even think that music brings them closer to their God. There is music for every occasion: from adolescent rites of passage to wedding celebrations, from relieving the tedium of manual work to emboldening soldiers to fight. There is music to help people get high, chill out and make love. There is even music for the departed and music to be buried to.

In the chapters that follow, I set out a fresh way of tackling the question of how music works. This draws on a number of sources: the ideas of twentieth-century Western musicologists and composers, whose opinions still drive much academic thinking about music today; Edmund Husserl's phenomenological approach to the perception of sound, which focuses on personal experience;[2] and some recent discoveries in the field of music psychology – an interdisciplinary area of enquiry that has forged its own identity in the last three or four decades to become a major focus of research, particularly in relation to neuroscience.

But there is also a wholly new ingredient in the mix: the insights that

I have gleaned over the years from working with children on the autism spectrum. Anthony was the first, but there have been hundreds of others since my initial visit to Linden Lodge School in 1979. I soon realised that for some of these youngsters – particularly those who have learning difficulties, for whom verbal language is likely to be problematic – music can offer a unique window onto thoughts and feelings that would otherwise be hidden from view. It was only later that I came to appreciate that, beyond this, autism affords us an alternative and powerful way of understanding how so-called 'neurotypical' people create, process and respond to music. This is possible because the human tribe exists on continua of interests, abilities, propensities and traits, and, by observing people who function at the extremes of our species' natural neurodiversity, we can better understand the ordinary, everyday, musical experiences that are characteristic of us all. But, most importantly, it's my belief that, through the prism of the overtly remarkable, we can discover the uncelebrated exceptionality in each of us. We are all musical by design, and most of our musical abilities, which exceed the capacity of even the most advanced computers, are acquired without conscious thought or effort when we are still in the early years.

1

How Does Music Work?

BY WAY OF INTRODUCTION to his seminal book, *Emotion and Meaning in Music*, published in 1956,[1] the American musicologist Leonard Meyer revisits the classic philosophical positions taken up in music aesthetics, providing an analysis that will help us to chart a course through the work of some of the main twentieth-century thinkers on Western music. Meyer characterises the main arguments as existing on two continua. First, he describes the view that musical meaning originates from the stuff of music itself (organised sound), a stance that he terms 'absolutist', and contrasts it with the 'referentialist' position, whose proponents believe that the sense of music is borrowed from its external context. Second, Meyer distinguishes between 'formalist' and 'expressionist' types of musical understanding. A 'formalist' approach is characterised by a conceptual grasp of how the sounds that constitute a piece are organised, and is acquired through conscious reflection – what Daniel Kahneman[2] would today call 'slow brain' responses: for example, knowing that the first movement of Beethoven's 5th Symphony is in 'sonata form'. 'Expressionist' musical understanding comprises listeners' 'fast brain' emotional reactions, which arise unthinkingly, intuitively: for instance, sensing that the

same Beethoven movement sounds 'powerful yet agitated'. According to Meyer, the internal or external, and fast or slow listening styles, are likely to operate in conjunction, so a listener who hears music dispassionately, purely as a series of structured sounds, would be classed as an 'absolute formalist', for example, while we would expect a 'referential expressionist' to respond affectively to a piece according to an external association forged at some point in the past. Meyer's own theory of musical meaning, derived from expectations set up and frustrated solely through patterns of sound, tends towards an 'absolute expressionist' position. Here, referential meaning, derived from the world beyond music, is regarded as subordinate, while an emphasis on an emotional response leans more towards an intuitive (rather than a structural) way of listening.

Given Meyer's taxonomy, we should not be surprised that the range of perspectives adopted by music theorists is very wide: from those who sought to identify external forces at work in the organisation of music, such as Heinrich Schenker (who looked to God for music's divine inspiration, and found it in the Austro-German tradition of composition) and Susan McClary (whose postmodern sociological perspective led her notoriously to hear the male sex act in Beethoven's 9th Symphony), to 'absolutists' such as the Austrian composer and theorist Arnold Schoenberg (who contended that it is *repetition* that brings coherence and intelligibility to compositions). Other 'absolutists' appropriated ideas from disciplines beyond music, exemplified in Leonard Bernstein's *The Unanswered Question* and *A Generative Theory of Tonal Music* by Fred Lerdahl and Ray Jackendoff, which both derive their rationale from Chomskyan linguistics. Viewing these apparently contradictory lines of thinking as a whole, it might seem that, in academic circles, at least, there has been no consensus as to how music works (surely a strange state of affairs given that it is a means of communication that we all appear able to grasp). Yet there are hidden similarities in the various explanations of music that have been advanced, and we begin by identifying these parallels.

Heinrich Schenker: The Radical Conservative

Heinrich Schenker – whose writing is invariably earnest and at times self-consciously esoteric – was arguably the most important Western music

theorist of the last one hundred years. Working in *fin-de-siècle* Vienna, he singlehandedly changed the way that we make sense of European classical music of the eighteenth and nineteenth centuries. The culmination of Schenker's life's work was his magnum opus *Der Freie Satz* ('*Free Composition*') of 1935, which opens with the time-honoured assertion that music reflects the divine order: 'All that is organic, every relatedness belongs to God … even when man creates the work.'[3] Schenker's line of argument tends to be obscured by the mists of his fervent musical chauvinism: he takes every opportunity to proclaim the superiority of Austro-German classical music, and his analyses focus exclusively on works penned by composers such as Bach, Haydn, Mozart, Beethoven and Brahms. But beneath this nettle of bigotry lies the remarkable conjecture that the works of this period are all ultimately elaborations of the 'chord of nature', so-called because it is present in the harmonics that are inherent in many natural (and therefore, in Schenker's view, divinely determined) sounds.

It is possible to hear what Schenker meant by silently pressing down a combination of five keys – two Cs, an E and two Gs – on the piano, and have a second person play a low C loudly and release it straight away (see Figure 3). The sounds of the depressed keys will remain, ringing in the air. This is Schenker's 'chord of nature'.

The effect is due to the fact that piano strings do not just oscillate at one rate, but as a composite of many different frequencies *at the same time*, which, as Pythagoras observed, exist in simple mathematical relationships to one another. Usually these fuse in the ear to give the impression of tone-colour or 'timbre'. However, as the experiment illustrated in Figure 3 shows, they can be made easier to hear by freeing appropriate strings to vibrate, enabling them to pick up on the frequencies present in the original sound. The lowest five of these form Schenker's 'chord of nature', which musicians refer to rather more prosaically as a 'major' harmony. This single unit of musical thought features pervasively in almost all Western styles. However, for Schenker, there was more to the function of the 'chord of nature' than this: for him, it lay at the structural heart of every classical masterpiece.

Schenker sought to demonstrate his theory through a complex system of analysis that takes the form of richly annotated graphs, in which staves

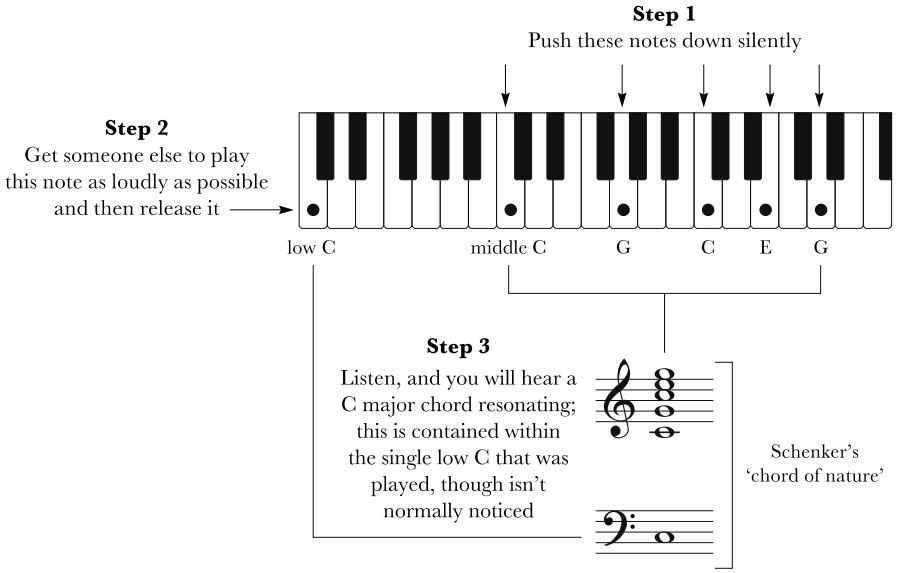

Figure 3 *Schenker's 'chord of nature', generally known as the 'harmonic series', can be reproduced on the piano.*

are overlaid with long curved lines and beams connecting unorthodox musical symbols and caret-topped numerals indicating the degrees of the scale.[4] These engaging figures seek to show how the 'surface' of the music – the individual notes and chords, several of which usually pass by every second – can be regarded as ornamenting a simpler, slower-moving melodic line and harmonic sequence, which are conceptually more structural and metaphorically exist further towards the musical 'background' (which is where Schenker believed the 'chord of nature' to exist in its most elemental form).

Some sense of what Schenker meant – in reverse – can be gleaned by listening to the way that composers have traditionally formulated sets of variations, particularly those from the Baroque and Classical periods of Western music, which often adhere faithfully to the structure of the theme, while the number of notes and the rapidity with which they pass by tend to increase incrementally. A well-known example is Handel's Air and Variations from his 5th Suite for Harpsichord, known as *The Harmonious Blacksmith*. Here, the opening of the theme is based on nothing more than two, alternating major chords, which become elaborated with

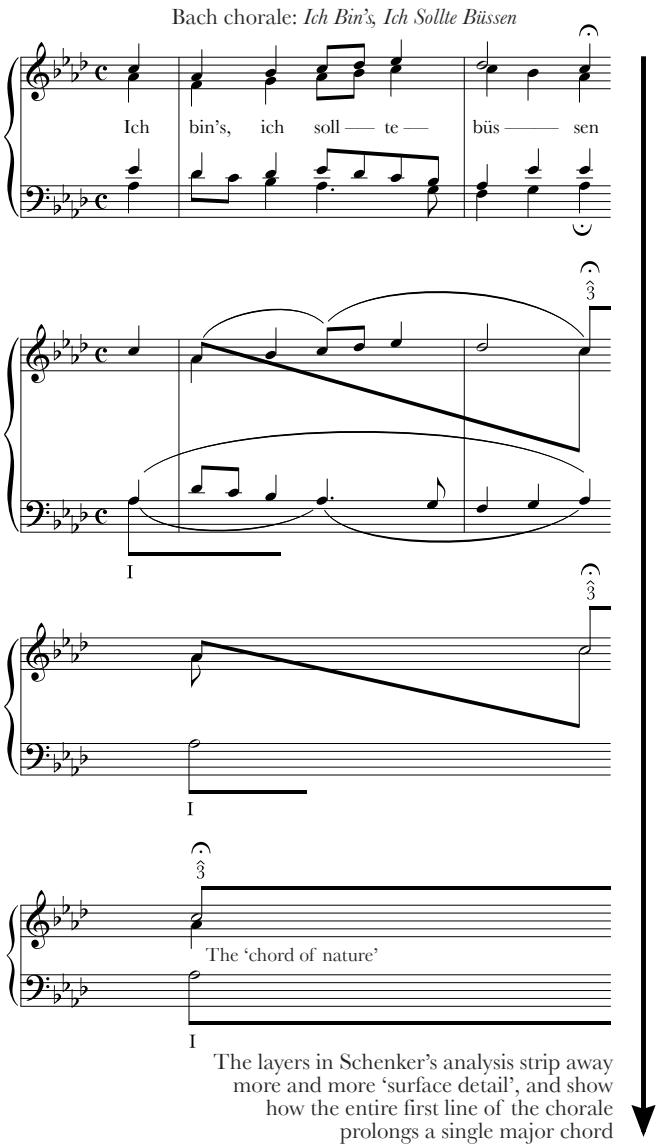

Figure 4 *Fragment of Schenker's analysis of Bach's chorale* Ich Bin's, Ich Sollte Büssen.[5]

increasing numbers of notes. The underlying structure remains easy to hear, though, as the ear is guided good-naturedly through ever more flamboyant figuration.

As Schenker's thinking evolved, he sought to delve ever further into the constitution of music using the principle of recursion: once his first