

Harmonics

....along tonight with a limited number of notes. [.....] has been very kind to bring this colossal instrument along and is going to show you what harmonics sound like. And then we're going to discuss the relation between these and the work that we're doing, and very very simply we can talk about harmonics in relation to music by drawing a length of string. This string isn't very tight, it should have been be tighter than that. That's a slack violin string. If it were taut, and we struck it or bowed it, it would give a certain note out, and when we consider the vibration on the full length of it we would call that the fundamental tone. And if the whole of the string is vibrating, then the half of it is vibrating, the quarter, and so on. In fact all the constituent parts of that string must be vibrating if the string is vibrating. That sounds so elementary that it's hardly worth mentioning, except that it took a few hundred years to discover that fact. 1'23

The fundamental of a string is the lowest note that it gives forth when it is not stopped [stopping a string is putting a finger down firmly on it], and if we stop that string, firmly, half way, then it will give a note that is an octave higher than the fundamental will give. And this tells you that there's a mathematical relationship between the pitch of the note and the length of the string and the tension. Now every subdivision of the string gives a note on its own account, and if we divide the string into a number of aliquot [see note 1] parts, equal parts, parts which would divide into the string without leaving anything over, we will get a note for each subdivision of the string. All the subsidiary notes which are sounding inside the string we call harmonics, or upper partials. Now partial vibrations - until you've heard what actually happens, it's, I'd say, impossible to imagine just precisely what will happen when a harmonic sounds. 2'50

Supposing we take a tube, a brass tube – that's a violin – this one is a trumpet – in the early days of wind instruments like the trumpets a very very simple brass tube was used, and when it was blown with a certain pressure then the fundamental of that tube sounded. The air column inside vibrated and gave its lowest note. Now if you blew a bit harder on it, it jumped up an octave, and the vibration could be [.....3'27] inside it - it was going like this, and you would then hear the octave above it. Now, this mode of splitting the air column by overblowing or blowing a bit harder, is the method whereby, in all the brass instruments, trumpets, trombones and things, we secure the different notes that are needed. 3'55

Now it was discovered that there were very very limited possibilities with a tubular instrument blown. In the early days the number of notes obtainable was too few to make a very good tune out of, so at one period they added little bits onto it to make it longer, and those little bits were called crooks, or shanks, and by so doing, if we add a little bit onto the tube, we alter the fundamental to make it lower. The longer the tube, the lower the note. The longer the string, the lower the note. It was then discovered, that although you could make the note lower by lengthening the tube, and you could by overblowing get a new set of partials - in other words another set of notes above the fundamental - yet it took time to change these extra bits, and so it was decided to fit an extra bit in the tube, and put a valve on it, in such a way you could blow through the tube by depressing the valve and get a long tube, and by simply lifting the finger off the valve you would get the original tube. 5'13

Now the valve trumpet and the allied instruments with valves are simply tubes with methods of immediately altering the fundamental note, and when you overblow a fundamental you get a series of partials which build up and give you the harmonics, or high notes, built out of subdivisions of the fundamental. And before we've got any further about this, I'll just tell you what a harmonic is on a string instrument, which Mr Watson is going to show us. If you put the finger down firmly onto a string – here's the finger board – if you press the string down very firmly so that it touches the fingerboard, and bow it on this end, or pluck it, you'll get a vibration with its fundamental – here – a

certain note, which is an octave higher than the vibration given by the whole string. Now, if instead of putting the finger right down onto the board, you put it on very very lightly so that it is not pressed down, and does not give you this other note, but you bow it with the finger pressed down very lightly, the fact that the finger is pressed lightly stops the fundamental from sounding, and allows the harmonics to sound. And then, if he moves his finger to another point, and puts the finger lightly on there and bows again, you will hear another harmonic. The quality of the harmonic is different from that of the fundamental, the open string. 7'14

Now there are two kinds of harmonics; natural harmonics and artificial ones. The natural ones are those that are caused by putting the finger lightly on the open string without pressing down to the fingerboard, and the artificial ones are caused when you put down a finger firmly onto the fingerboard - there - and then place another finger lightly somewhere else, and thus induce harmonics. By so doing you can play a series of high notes which would not be heard in the ordinary method of fingering. Now to make this clear, Mr Watson will play a few harmonics for you and tell you what they are as he does them. 7'46

RW: Well I'll keep to the bottom string here [the lowest in pitch] so as not to confuse you, so we'll treat it as a one stringed instrument. I'll just concern myself with the bright metal string at the bottom because it's easier to see. Now, if I pluck it you will be able to see its fundamental vibration [plucks the string] again [repeats]. That is its fundamental note. Now if I do what Mr Halliday suggests and put my finger exactly half way up the string but pressing lightly, not pressing it down, [plays the harmonic with the bow] I get a note which is eight notes, or an octave, higher than the fundamental. This is the fundamental [plucks the string] and this is the octave [bows the harmonic]. Now here the string is vibrating in two segments, and if I bow very vigorously and produce the most unpleasant noise you will be able to see the two segments vibrating [plays the harmonic vigorously]. Can everybody see that?

Now if I place my finger here we split the string now up into thirds and I can produce the same harmonic, obviously, in two separate places. Here [touches the string exactly one third of the way along, and plays the resulting harmonic]. Now if you watch this point [the other point on the string that is one third along] you'll see that here is automatically created the part that Mr Halliday has drawn here - the nodal point. It occurs here. Will you watch now that we've got three, as here we have two segments vibrating, now we have three segments vibrating [plays the harmonic]. Is that clear to everybody? Now here we have our fundamental [plays the open string], here one octave higher [plays the first harmonic], and now, instead of making thirds, if we take a quarter of the string we get a note which is two octaves higher [touches the string exactly one quarter of the way along, and plays the harmonic].

Now this is more difficult to see. The string is now vibrating in four sections. You'll have to watch very carefully [plays the harmonic again]. Now of course that note - I can bring it at, say, here - it is the same [demonstrates on the different quarters]. It is a quarter. The same as this harmonic I can get here, or I can get here [demonstrates on the different thirds]. Now this is an interesting note. This splits it into fifths - five sections - so I can play here, here, here. So we've got five places for it [plays the harmonic]. And it goes on up [plays more harmonics]. So, fundamental, first octave, dominant [the fifth note of a scale], second octave, third, fifth, and an octave. Yes? 10'52

There is a demonstration of harmonics on a double bass, on youtube:
<http://www.youtube.com/watch?v=yZqdidbcYV4>

EH: A beautiful demonstration. And its applications in the work we are doing are tremendously important. You saw if you were looking carefully that the string stands stationary at certain points and seems to wind round, and you found that the same note could be produced by pressing lightly in

various positions, and so on. We could cut the string in this way, and find with a sufficient manual dexterity, that we can produce a complete scale going right up, far beyond the note of the fundamental, which, if you press your finger down on the fingerboard, you could not do. I think we ought to do that to make sure that they understand that these things are very peculiar resonances, the harmonics. 11'52

RW: Yes, for instance, if I play this string [C], and I play two notes [D E]- now that [E] is the note under my little finger. Now if I take the pressure off the fingerboard and just let it rest lightly I get this note [plays the harmonic].

EH: Now do you mind going up to show that the thick string gives a peculiar thick quality to the note as you ascend.

RW: Yes

EH: Make the scale and note how it thickens

RW:[plays a scale on the bottom string]

EH: Would you play that same note on another string for me? so the qualitative difference can be heard.

RW: [plays the top note of the scale he has just played on another string - it is a bit scratchy] Excuse me a minute, it's the temperature of the room. [Plays the note again] I play it in three different places. Here, here. 13'10

EH: And you notice the peculiar different quality that is emerging out of these notes, which are all the same pitch. The strings are different thicknesses. If we took a string and deliberately cut bits off it, like this, eventually we could come down to a string that was shorter than its thickness. That would give a very peculiar note, a very [dubby? 13'34] sound. If we put a very thick string here, for very long fundamentals and then a thinner one here, and thinner still, then thinner, as we're ascending we'll get a brighter and brighter note. But if we play the high notes on a very thick string they'd sound not so bright. You probably noticed that immediately, as Mr Watson played a note on this string and the same note here and here, the tone became progressively brighter. If we increase the thickness of the string, eventually we come down to the level where the thickness and the length of it are the same, and we could actually then stop calling it a string, technically, because a string should be longer than its thickness. And the internal resonances of it then would be quite different from the resonances produced with a thin string of the same length as this thick one. 14'34

Now Mr Watson has a very interesting question here about two ways of looking at the universe. One as built up from a fundamental resonance, and the other, the opposite, built up - built down, from the top. Now lets look at the sea. The law of harmonics, the Fourier series, can be applied to things like tidal phenomena, to music, to alternating electrical currents and so on, and a whole series of natural phenomena, can be analysed in terms of this harmonic series. Supposing we take a body of water, between two shores, and consider it to be a length of string. Now if we were to try to beat that body of water so that it went down, and then up again, down and up, that would give the fundamental of that body of water. It would impart a blow to the air, and that blow, carried to the ear, would give you a certain sound, a certain pitch. If we hit it in such a way that the waves on the sea cut the sea in half, we would get the octave. If we cut it, each one, into two again like this we would get the octaves above that, and so on. And we're then seeing that the subdivisions are producing the smaller and smaller motions, which are higher frequencies. 16'22

If we consider the full width between the two land masses, there, as the length of a string, and consider that to be the prime state, and a first motion of it to be caused by an impact of a force, forcing it down and swinging back, imparting impulses to the air, and those coming to the ear, then we can build up a feeling of the universe from the fundamental. But equally well we can see another fact, another phenomenon which we see very easily. When the air blows on the sea, it first produces very very tiny ripples, and those ripples are like the upper partials, our harmonics. And factually these ripples occur first, when we watch them. But if the wind pressure increases, and the time of it is long enough, there begins to appear a swell, on the sea, which gives you a lower harmonic than this one, and in theory, you could get a wind force applied over the whole thing so violently that the whole mass of the sea would be forced down, and give you the fundamental. 17'46

This allows you to see that these two ways are looking at the same fact, As we see it in this sense world, the surface of the sea is first blown into very very tiny ripples, and those tiny ripples are like the upper partials, the high harmonics, of the string, and gradually with the increase of the force and the time expended, we have the appearance of lower fundamentals with the limiting term, the very lowest note possible to get with that length of string, or that diameter of ocean. 18'29

Now we have to consider the metaphysics and see which one of these is true. Or, remember a philosophical principle we had: if there are a pair of opposites, to serve both. Both must be true. Now let us draw a line - I think we'll go down [.....] and draw a line - and let that represent now not a finite string or tube or surface of water, let it represent, let it go off the paper, and represent infinite power substance. And this power substance has, in itself, the power, because we're not dualists. This substantial power is able to distort itself, so that it can produce an immediate depression, throughout itself, an absolute depression, which would be equivalent to drawing the line a little lower down. Now that one we would call the absolute fundamental. But, in the process of doing so, as we said before, if the whole string is vibrating then every part of it is vibrating. So if we conceive this substantial power to distort itself absolutely, then all the parts are distorted absolutely equally, and there is then nothing to differentiate, and if this substantial power actually did this, and nothing else, there would be no universe. So that if we postulate on this substantial power, that it has made a universe, we have the evidence of it. We exist. We have to say that it did not do precisely what we have defined was one of its possibilities. It did not absolutely distort itself and produce an equilibrium. What it did do was bend down in one place, and up in another. And this immediately gave rise, as you can see, that the depression of that causes a reaction of swing back. above the median line, and the ascent of this one causes a reaction below the median line, and there is a point of apparent stillness. 21'06

This goes on infinitely, and immediately we have brought into being a series of universes, each one of which has, what is for it, its own fundamental. Yet that fundamental is a partial of the absolute fundamental that could have been, if the absolute power substance had not wanted to create. If it distorts itself absolutely and equably throughout, no universe occurs. It must distort itself in such a way that differences are created. So when this one swings down, that one swings up, a differentiating factor is created. When that one swings back, and this one swings back, that one up and this down, then again a different factor is created. On these lenticular shapes here are something like the section through the solar system, or through any other system that starts this way. 22'14

So we have here a resolution of the two ways of looking at the universe, one from a fundamental and one from the harmonics. In fact when the absolute power substance, which is intelligent, sentient substance, decides to create, it does so simply by pushing down and up in adjacent places. Which means that on any part of this there is a down and an up push, all the way along - down, up. Now we have to grasp this very clearly because it has very important applications later on, in the association of ideas and feelings. It never moves except to distort in contrary directions in order to produce a differentiating factor, and the universe is only a differentiated field. And the mode of

differentiation is by contrary action. You can see why. If all the action were in the same direction absolutely, no thing could appear. A thing is a product of a stress strain of opposition. 23'34

Now if I take a little bit of that string, and draw it up, with a thickness, like this, and then I bend it, like this, you can see immediately that if that string is bent by a force pressing that way, and these two ends being tethered, or, bending the other way, reflexly, then it follows that the inside of this curve is contracted. It is stressed, we'll put a plus in there to signify that stress, and if that is stressed then it follows that the outside is strained. We'll put a negative for it. Now every string, when it is vibrating, is continuously stressing the short curve, and straining the long curve, so it is a physical impossibility to induce a stress without inducing a corresponding strain. Electrically we could say that one side of it is electro-positive, the other side electro-negative, and the same rule would apply. On the stress side you can see it is the closing side, and on the strained side the opening side. 24'55

We will see the deep implications of this stress/strain opposition when we remember that the sign for stress is the sign of Saturn, and the sign for anti-stress was Jupiter. The harmonics are the partial vibrations. We have said that the infinite substance of the universe, being also a power, could have simply depressed itself infinitely, which would have meant a continuous infinite progression. and no thing would have been made, because the word made implies a division of the appetite. In fact mad implies an excessive division of the appetite. The concept: substance, activity, division. If you kept the E off, a man is mad when he is divided in his substantial activity. Schizophrenia, the splitting of the mind substance into separate entities, is madness. All forms of non unity of the psyche are madness, and if you read it that way it's dam, because it is the damming caused by the stressing, as we shall see. 26'18

Now the drawing we have done is an abstract drawing, and therefore it cannot give us a true picture of what is going on. But we know that sound is propagated by spheres. If I hit that board, there is a point of impact, and there is a disturbance round it. Now the drawing I am doing is an abstract drawing. It is on the surface of the paper, and really the vibration which I hit there has been imparted to the air, this side and that side. So that circle will have to be thought of as a sphere. Because when I hit the board, it depresses a little bit, kicks the air on the other side, and kicks the air on this side, in the recoil, and the result is, the propagation of a spherical process, where the air is made rare, and condensed, alternately. So if we take this symbol going like this, wherever there's a nodal point there we can consider is the edge of a sphere, and the beat on the board distorts the board when I hit it, that hits the air, and the board springs back and hits back at the air on this side, and thus there is a propagation of a spherical impulse. That spherical impulse has to be imagined, during all the time we are talking, otherwise we will be dealing with an abstract, and this string is an abstract, out of the absolute substance. 28'01

The absolute substance of the universe can be considered as an infinite sphere, if we remember that all parts of infinity are equidistant from any part. Any part of infinity can serve as a centre, and as we can propagate out in all directions, an equal distance, that is, to infinity, it is an infinite sphere. So when we look at this diagram here, with the stress on the underside of the curve, really we should posit the impact there, and draw that rounded, and then imagine that we have drawn a piece of rubber, which we have bent round, this rubber, a rubber rod if you like, and we have bent it round till the two ends touch, There they are, and the result is that the whole of the inside of that circle is stressed, and the whole of the outside of it is strained. 29'05

Now this is a much truer diagram than that. It is still abstract because it is on the plane of the paper, but to make it concrete and true all we need to do is remember that it is a sphere. It then becomes a factual diagram in our minds. The impulse now is in the centre and is kicking against that which surrounds it. The part that is surrounding it is stretched in the process, and it is an attempt to tear the untearable. We must remember that the absolute substance is a continuous substance. It has no

parts, it is not atomic, and therefore it cannot be torn to bits. This is very important. In Buddhist psychology you have the statement that 'That which is made of parts can disintegrate. That which is not made of parts cannot disintegrate'. 30'05

The absolute continuum is not made of parts, therefore it cannot disintegrate, and this is the greatest problem for fundamental science. How does it appear that the infinite, which is absent nowhere, can give rise to the phenomena of motion, which implies change of place? Motion is change of place. Change of place is impossible, if there is an infinite substance, because it is already infinitely extended, and therefore it is said that change of place is an illusion. It is an appearance. Now the word appearance gives you the key to it, because the pi-ra is there. The energy which is posited produces a wheel. When I strike the board the vibration in the board, if photographed with the appropriate camera, will show you that the molecules inside begin to rotate, and therefore it is an appearance, physically. Remember the infinite substance cannot go anywhere, and nevertheless it's going to produce an appearance of motion. It is like an elastic solid. When you hit it inside the curve, you compress it, and in the process you stretch the outside. But that stretch cannot go to the point of breaking, because the absolute substance is a continuous substance, and is unbreakable. So there appears a strain, and immediately following it an attempt, on the part of the strained surface, to return to its original position. In other words if we say there is a positive there - push - immediately afterwards the reaction from outside the centre of positivity is a new positivity on the perimeter, which pushes back to the centre. 32'19

Now this isn't very very difficult to visualise if we say, 'every time we touch the board we cause a flight from the centre of motion to a certain distance', and immediately all the particles round about it, because they have been distorted, try to regain their original position by stretching from their point, which is to move back onto the centre that created the original disequilibrium. So if that centre is positive in one second, the positivity shifts to the perimeter in the next second, so that this one immediately becomes negative. So there's a continuous changing of positive and negative going on, from the centre to the periphery. Now, if you remember the drawing we did with the six circles penetrating each other, and you have the power to visualise an infinity of spheres of pressures, or positive stresses, producing negative strains round them, which immediately react and become positive centres, and create negative strains on their edges, you can then see - here's a diagram of it [.....] - this diagram shows you the same thing going on to a large portion of infinite space - specially abstracted for the occasion. 33'56

We now see that the centre of positivity can be anywhere, and in the fact of positing, induces a negative. The negative cannot remain negative absolutely because the universal substance is a continuum, and it must strike back at the original point of positivity and reduce it to a negative. And we've said before that the paper representing this Absolute, being, consciousness, motion, every part of this paper can posit, and produce round it a zone of negation. But we have no ground whatever for imagining that that particular one should gain the victory absolutely over all the others. and by spreading its positivity keep pushing farther and farther out, because that would be to attenuate absolutely the absolute substance, which is impossible. 35'06

So there is a limiting factor for any given energy positing itself, which being a finite centre of positing, can only push out to a certain limit and strain the surrounding substance and reduce it to negativity, and at the limit of that there will be another positive centre which is trying to do the same thing, and create a zone of negativity. Now you've seen what it means to create space. When we consider the absolute substance we are considering something which we can conceive by positing elasticity and solidity, which are two wonderfully contradictory ideas, but must be asserted of the Absolute. So that any given point that we care to touch, in infinity, has the power to posit, and in so doing to negate, its environment, and when it is pushing out it is causing a zone of dominion within itself which, to it, is called space. And where its energy fails because of the counter stroke, to

it there is a resistance, which is that created by another centre, beyond itself, and that resistance is the wall of its being. 36'47

[.....] Humpty Dumpty sat on a wall. The wall he sat on we can represent very simply, like this. This should be a spherical wall and we're going to sit him on here, there's Humpty Dumpty smiling in complacency with his legs over the edge. He's sitting on a wall because he is aware that there is a genuine danger of going inside there and being trapped, and a danger of coming outside there and not existing. Now we write M in there and H outside. Now he is Hum, and in inside, T, D - integration factor in himself - and Dumpty goes inside. So the Humpty part of it shows that he has a power, a substance. The Dumpty part says there is a danger of falling into finity. So in Lewis Carroll's version of this, if you care to read it, you will find that he knows all about it. He's hinting at it continuously, and the little rhyme tells you about it. 38'15

Humpty Dumpty is the Cosmic Egg, the great potential, he's the Hiranyagarbha [see note 2] of the Hindu philosophers - the great Cosmic Egg. If that egg manages to stay on the wall in perfect balance between finite existence and infinite spiritual power, he will enjoy himself, but if he falls inside there then it is said that all the king's horses and all the king's men will not be able to put him together again, because to fall inside this dump is to fall into finity, and in the process to be reduced to a series of harmonics, and this is what happens to you. The disintegration of your physical body is a product of harmonic separation. 39'12

Now although harmonics are functions, as you heard on this instrument, of a fundamental, they can be produced independently, without the fundamental, and when that happens we get what we call the fall into intellection. You know that an idea appears to be a finite clear form, and that the idea of a monkey and the idea of a sparrow are separate ideas. The idea of a man is another idea. The idea of - well we'll crown that one - that's the idea of Jesus Christ. That's the idea of a good man, a medium man, a worse man, a monkey man, and a monkey, and so on, and we go pushing it right along here. We'll alter this one - this isn't a sparrow any more. This one is going down to the vegetable world, and to the mineral world. 40'10

So we can see that if we take this fundamental, and we allow the resonances to appear in it - these little points, the nodal points in between - if we vibrate it too much it will disintegrate. We will cause a sudden translation of a definite amount of energy along the string, such that the string itself, which is already a function of the universal substance, will disintegrate. Now we cannot disintegrate the universal, or the absolute substance, but we can disintegrate any compound of motion on it. Supposing we get a string, and we proceed to apply a stimulus at the ends of that string, and induce a motion in the string, and then by a series of damping processes we cut down the motion here and here, but keep it going in here, we have in effect, in actuality, in act, we have severed this part of the string from that. The string representing the absolute continuum, the absolute substance, is not severed, but the actuality is severed. We know that we're all potentially geniuses. but potentially isn't good enough. We've got to actualise it, and the only way to actualise it is to put it into act. We have to become actually what we feel we are potentially. 42'00

If we damp this side of the string and this side of the string, we can make a note, which would not be altered if we cut those two ends off and just left this middle one vibrating. The middle one would then constitute a fundamental of a string of that length - one third of the original fundamental, two thirds of which we have cut off. Now as the absolute substance cannot be disintegrated, all the disintegrations that appear in the world are no more than the effect of damping particular parts, which means if we take the mind of a man that we would call a schizophrenic, it means not that that man is short of certain ideas which would constitute health, but they have been damped down by repressive forces, till they have fallen below the actual level, below the level of actuality. They can no longer influence the man's behaviour. So although they exist as potentials, they no longer exist as

actuality, in which case the man then functions as if he were only so big, and he knows only so much. 43'17

Remember that know, with a K in it - that K is the glyph of the application of a force. It means actuality now. You know only what you can now recall. You don't know all the things you've forgotten, that you can't remember. You know what you can now actualise, and to increase knowingness is to increase actuality in the now. What is not in the present actualisable is not knowledge. Now you can see by this diagram of the fundamental cut into three and the two ends cut off, that if those two ends were really cut off, that being, in the middle, would sound a note which would be equivalent to a third of a fundamental. It would resonate, and respond and communicate with other beings which had a fundamental of the same length, and, with some of the partials, but it would not be able to communicate with beings of a lower fundamental with sufficient intensity to influence their activity. This is tremendously important when we come to consider the influence of mind on mind. 45'01

Let us now draw two fundamentals. Every man has a governing concept. The governing concept we'll say - there's a man of three, and here's a man of four. This man has a beat that is going through his organism, cutting him into three parts. This man has one that is going through his organism cutting him into four parts. And these node points are not coincident, and consequently no communication is possible. Communication is possible only where we can actually place these nodal points together. So if he were limited, in actuality, to that kind of resonance, he could not communicate with this man except fundamentally, that is, at the very very lowest level, like a gross material body. They can both get in each other's way in a tube train, trying to sit on the same seat, but they would not be able to communicate when they disagreed, because there'd be no points of communication. So in order to communicate we must step up. We must continuously do this with all our subdivisions, in both cases, and we must go on doing this in the hope, and it is a hope, to begin with, only a hope, it isn't an actuality, that by subdividing this fundamental, by making them vibrate at higher frequencies, we will arrive at a resonance which brings the nodal points of both systems together. Then communication can occur. 47'04

Now Christ is said to be all things to all men. Now if we take the gamatria of him in Greek his number is 888, which means infinity on three levels. He has an infinity of thought resonances, thought harmonics, feeling harmonics, and urge harmonics. 8 on it's side is simply a glyph of this octave law. Infinity means, this octave law. And Christ has so cut down the frequencies inside himself that he has a resonance for every being that exists, and therefore he can communicate with them. 47'44

Now we've said that the man with only a fundamental cannot communicate with a man of the second harmonic. Funnily enough they call the fundamental the first harmonic sometimes, so they can start with one. This one's then two. This man, or this man, communicate only on the gross material level, but this man doesn't know what that man is doing at that other level. But this man, who has the fundamental, knows what this man is doing. This is what we mean by higher man. No man is void of his fundamental. There's a certain level which all men respond, and over and above that there are other levels. The object of evolution, of growth spiritually or the movement to freedom, is the increase of the inner harmonics. 48'50

Now in fact we said that if a fundamental is vibrating then all its parts are vibrating. If we take an ordinary typical string of a certain length, and say that is G, then it is sounding, simultaneously with the fundamental, a note an octave above it called G. It's sounding D above that, G, B, D, F, G, A, B, C, D, E, F, F# [F sharp], G, as it's going up, to infinity. But all the harmonics are getting fainter and fainter and fainter, but they exist. This is the most important - they exist. Now they are all the time. If they did not exist we could not create them, because whatever is not can never come to be, and

whatever is can never cease to be. So supposing we say there is G, down in the bass clef at the bottom, and then G above it, and then we've got D and G above that, B, D, F, G, A, B, C, D, E, F, F#, G, going up there to infinity, [.....50'03] when we get up one octave, two, there's our third G, the fourth G, and we have a continuous scale up there A B C D E F G, G A B C D E F, and even the F# coming in, to lead to the G. It means that all the notes of the scale are sounding in that fundamental, but so faintly that we can't hear them. 50'28

"The angels keep their ancient places", as the poet said, "Turn but a stone and start a wing". If you increase your sensitivity you don't need to create these higher harmonics. They exist. If you increase your sensitivity, even on this instrument. Mr Watson will show you in a moment, that by listening you can hear things that you didn't know existed. When you increase your sensitivity you become aware that there is a simultaneous playing of that which, when serialised, would constitute a melody. When Mozart was composing, he heard a complete musical composition, simultaneously, not serially, and it was a marvellous experience for him, and he was quite depressed when he had to write it down serially, because the whole experience of a great symphony, in simultaneity, is something totally different from the same thing extended through time. 51'37

When the fundamental sounds, simultaneously all the harmonics, which means every note on the scale, but at fainter and fainter intensities the higher you go, are played, which means all you have to do is increase your sensitivity, to become aware of resonances inside yourself which you did not previously know existed, and which resonances place you in the position of understanding a person on a lower level, without being understood by him. So you can see the whole question of hierarchy of forces is linked up with an increase in sensitivity to the harmonics. Now perhaps Mr Watson would like to play a note now, and we will listen, and see if we can hear something other than the fundamental, other than the second harmonic, for example. 52.39

RW: Can I see first Mr Halliday whether I can show what you've been talking about, here. I'll try on this top string if you'll be patient with me, because these harmonics can go very high, and it's touch and go whether I can get them. We'll play the top string this time [the string highest in pitch] - the fundamental note [RW plays the top string], the first octave [he plays the harmonic half way along the string] the fifth [he plays the harmonic on one third of the way along the string] the second octave [he plays the harmonic one quarter of the way along] the third [he plays the note a fifth of the way along, etc] Now here the scale begins to start. [He plays more harmonics in series up the scale.] Lucky night! 53'19

EH: Yes

RW: Well now yes

EH: Just explain Mr Watson. All those notes are on one string

RW: Oh yes

EH: Will you play the fundamental again so they can hear how coarse it is.

RW: Yes [he plays the string with no fingers on it]

EH: Now [RW plays the harmonics again] Now in temple music in the ancient world they used different instruments because they have different psychological effects. When the fundamental is played - will you play it again? [RW plucks the string] Will you bow it for me? you'll get a rougher sound. [RW bows the string] You can hear an earthy quality in it. Now will you play me a nice harmonic to show the difference. [RW plays a harmonic] Already there is less earth in it. Now as he

plays the higher harmonics it will begin to sound like a wind instrument. [RW plays some of the higher harmonics, making a little tune with them] You notice the quality of that tone, in the harmonics, isn't the same as that produced by the fundamental. The French and Germans would call that harmonic a flageolet tone. It's like a wind instrument, and they can be very beautiful. On the violin they sound just like whistlings, and are very very beautiful. The string is thinner, and the whistling goes higher and higher and higher, and it's almost impossible at times to detect the difference between such a harmonic and a beautifully produced soprano note, sung pianissimo. So, we will have that scale again to make sure that they know what they're listening for. 55'05

RW: Yes [He plays the fundamental followed by the series of harmonics]

EH: Now remember all those notes are playing simultaneously, when the fundamental is played, only they're very very quiet. Now can we have the fundamental, and see if anybody, honestly, without fooling themselves, can actually hear something other than the fundamental above it.

RW: Yes. May I suggest Mr Halliday we revert to the bottom string [the lowest in pitch] because the lesser - I'll just - [he plays the bottom string] the fundamental [he plays the harmonics] now I think if we [he plucks the string] it gives a cleaner note - you can hear the - [he plucks it again] The clearest one is generally this one, the third [he plays the third harmonic] see if you can hear that if I do it again [he plucks the bottom string] 56'2

EH: It's just as it's beginning to die away that the harmonic's swelling, because the intensity of the fundamental drops to a certain level. When bells are ringing in peal, sometimes the harmonics sound louder than the fundamentals. Now if, when Mr Watson does that again, just as the fundamental is fading out, listen very very carefully, and see if you don't hear the harmonic. [RW plucks the string again]. Did you hear that? Now you notice a peculiar thing about the harmonic. It has its own periodicity, and following a silence it will suddenly swell in, and then go away again. 57'13

There is a peculiar relation here, because the whole law of periodicity in the universe is a function of the same law that is governing that string, and what people call liking a thing one day, and not liking it another day, is a function of exactly the same thing that is going on on that string. The harmonics inside you, which are subsidiary desires, and just in the same way that that harmonic has its own periodicity, and when your fundamental goes down in its intensity, at a certain level one of your harmonics will step up, from itself, it's cause, to a certain kind of frequency in the harmonic suddenly corresponding with a portion of the string, and when that happens in the psyche, there's a sudden whim that comes in, and says 'I want so and so'. And very shortly afterwards it goes down again, and that one's no longer present, and this changing of the want into a not want, and the not want into a want, suddenly, is called the principle of twt - T W T - or That Was Then, which afflicts human beings terribly. The fact that this is a law means that you cannot blame any person whose mind changes periodically, because either they understand the law, or they are subject to it. There is only one way to be above a law, and that is to know the law, to climb above it by non identification, because if you are actually under the law, there is no possibility for you to escape the consequences of it. 58'52

Can we have that again to make sure, and do you mind trying it on all the strings, one after the other, so there may be one that's at a certain texture in the string that might escalate?

RW: Well we'll do the bottom one again. [He plucks the bottom string] now we'll try this one [he plucks the next string] and the top one [he plucks the top string] that note's clear on that one [he bows the harmonic that is audible] if you listen. Mr Halliday, with reference to what you were saying, I can show one other very interesting thing. If I play the note of this string on a lower one, it

will be clearly seen how this top one vibrates entirely of its own, without any interference from me. If I try and reach that note [The top string of a bass is tuned to G. RW puts his finger down on a lower string to play the same G] Do you see how this top one is vibrating now although I'm bowing and fingering on this bottom one. The top one is not being touched by me at all. 60'22

The first part of this short video has a demonstration of this on a violin: <http://violin-and-violawonderhowto.com/how-to/learn-sympathetic-vibrations-for-violin-174956>

EH: Now that principle of resonance is very very important. Could you now show us a little bit of the Tartini differentials while you're at it? Will you double stop? [to double stop is to play notes on two strings at the same time] Double stop, and there should be heard a resultant tone, when you're double stopping a third and a sixth [eg C and E or E and C]. You should hear a lower note.

RW: A third and a sixth.

EH: A third and a sixth.

RW: Yes [he plays the two notes together]

EH: Now if they're true, if they're exactly true, you will hear a lower note, which is called the differential tone. When Tartini was teaching his pupils on the violin, he taught them to check, in double stopping, by listening for this bass note which must occur if the other two are correct. There is one that is lower than the two notes that are stopped, called a differential, and there's one above it, the summational. If you listen very carefully you will hear a low note humming underneath. 61'26

RW: I must get these very carefully in tune because it may be difficult to hear this [he plays the two notes].

EH: I tell you how we can show the difference. The resonances on an instrument of this kind, a violin or a cello, are such that if you don't finger the instrument in exactly the right place the note goes dead. You have to get the resonance up by accurate fingering, don't you?

RW: Yes.

EH: So if you finger slightly out it will sound dead. A good instrument player with a stringed instrument can make a cheap instrument sound good, and a bad player can make a good instrument sound bad, dead, by simply not fingering exactly on the centre of the note. So do you mind playing a double stop, in the same way, slightly false.

RW: [plays the two notes slightly out of tune, then in tune]

EH: If you listen very carefully you can hear a peculiar fittingness, in the one case, which is missing in the other. This fittingness gives a great carrying power to the tone. The same thing is the cause of harmony between human beings, when it occurs, in other words, rarely. But remember we are talking about a principle, which is here illustrated on the string, which is applied throughout the spinal column that we've all got inside. The same resonances are cutting the spinal cord, and there is nothing in the universe that exists that is not subject to the same law. 63'15

Mr Watson's raised a question here, saying during long rehearsals of modern music many members of the orchestra become very bad tempered. Now a lot of modern music is a product of the modern soul condition. In other words it is discordant. If we take a note of such a length, and the note of such a length, so they're very nearly [.....] but not quite, we'll get a discord.

Now let's pretend for a moment that we have an instrument, which might be like this - we'll pretend we've got a horn. Or there may be one going right in like this. Let's pretend that every part of that horn will resound to a note of a certain pitch, because it has a certain diameter, here. We could then if we wished arrange all the notes of the scale round there, with the lowest note there. Now this is something like a schematic diagram of a structure inside your hearing apparatus. When we take a note, and sound it, and a note far away from it, there's plenty of substance in between to stand free, to allow those vibrations to occur. But when we bring two notes together, we stimulate that organ in adjacent parts, with no space between sufficient to allow the vibrations to be absorbed. The result is that we can, by playing two discordant notes, literally disrupt the hearing mechanism. We can actually make ourselves deaf. With a very simple experiment we can deafen ourselves for a few minutes, and frighten ourselves, by simply taking an iron bar and smiting a lamp standard outside, one of those metal ones. Smite it very hard and you'll hear a funny thing, and for a few minutes you'll become deaf. And that's because you have given a violent shock, through the harmonics in this long string of the lamp standard, and because the thing is not cleanly made, it's full of little oddments, inequalities of thickness and so on, which produce all sorts of harmonics that are not related in aliquot parts throughout. The result is what we call noise, as opposed to musical tone. And many of the harmonics are so close together that they can and do cause a temporary disruption. It can remain permanent if you like by hitting very very hard several times. 66'15

The important thing to realise is that a discord is simply the product of a vibration which is very close to another one, and which is disturbing the substance, violently, in the same zone, in contrary ways, and thus trying to sever it. If we give space between the notes we allow a zone of freedom. Now if we take a - supposing we take a scale in music and we say C D E. Now if we strike C and D as a chord, we feel that it [66'56... break in recording.....67'02] we will get distressed, and the reason is that our sensorium is actually being disrupted by the sounds. Would you mind playing a - this kind of thing. Play a major interval. Let us see that it can sound quite [.....]

RW: [.....] the ones you suggested - C and E [he plays the two notes together].

EH: Now notice that that sounds cheerful. There's no sensation whatever in there that we should be other than happy. And now if you play it again, and then turn it into the Eb [E flat], you will feel immediately that already they're beginning to become Yiddish, or sad as [.....] [RW plays C and E together, then C and Eb] Notice immediately that when that note E was turned into Eb, already we start to cry. The reason is that the freedom that is so essential for us, and which is objectified in this hearing apparatus, has been reduced. Now play the C E again, then the Eb, and then the D, and then the C sharp. [RW plays C and E together] pleasant, [C and Eb] sad [C and D] horrid [C and D sharp] terrible. 68'33

Now this tells you something about freedom and why we are pursuing it. Freedom is the same thing as lebensraum. We must have room to live in, and every sound is a being in its own right. This is a very peculiar thing to say, but if we allow that the absolute substance of the universe is, itself, Satchirananda - it is being, substance, consciousness, and motion. There is nowhere in the whole of infinity where these three do not concur, which means to say that every little tiny harmonic is a substantial motion intelligence. It is a being in its own right. So if you bring together some of these beings and start overlapping them, you are infringing on their lebensraum. In fact one vibration brought too close to another interferes with it, and begins to chop it up. Hence the discordance, there is a real conflict. 69'45

Now, because we are living in the 20th century, which signifies disintegration and the opposition of two ordinal systems, therefore the psyche of man is being cut up, and then the sensitive men, the musicians, who are evolving towards consciousness, and have periodic intimations it exists, they become aware - they're the advance guard of humanity - they become aware that there is a problem

to be solved; we must assimilate, somehow, all vibrations, including discords. Now the funny thing is this. If you listen to a simple chord, like C, E and G, as a kiddy, you think it's marvellous. If you play with an Eb in it, most children will feel very sad, and if you sing a song in the minor you can reduce most children to tears. If you begin to make a chord with C and D, then only a fellow who has thought a lot and listened a lot about it, and tried to justify it, can assimilate it, and when we come to a twelve tone scale, and we begin to jam together all sorts of notes, regardless of the old traditions, then it needs a man who himself is prepared to face all discords, to listen to it. So we can actually place a man, in his time, by his ability to assimilate discords. 71'22

We have said that on the Absolute substance all tones are produced, which means that every tiny subdivision of matter is producing a note, and that note is adjacent to the next note. so that the Absolute is already assimilating all conceivable discords, and if we wish to become absolute we must learn to assimilate discords. Now you can see that, supposing this is part of the ear, and we practise only of C and G, which is the dominant, here, if we practice only on that we will have a note here, a note here, plenty of space between, and it will never get exercised at all, so that it will have no elasticity. If we reduce the interval - put an E there - then we will have a period at first of slight discomfort, and we will then begin to assimilate that, and we'll have two empty zones inbetween the C and the E, and the E and the G. If we then subdivide that and make another note we will find a discomfort arising again, because the organ of hearing is set to not being used, and therefore not properly responsive. If we then put in another subdivision we come down to a semitone, then after practice the hearing structure becomes elastic. It becomes able to assimilate that which was previously distressing, and if we go on doing it to quarter tones, eighth tones and so on, ultimately we can assimilate anything, including what would be called a flat note.

73'14

Now, in India when they sing they don't bother to sing on the note at all, because they say that is the audience's business - he should imagine it. And this is true, it's a point of view, you know, actually to say 'it's my business, I'm doing the listening', so if a singer, through emotional excitement, sings C#, when it should have been D, I hear a perfect D. Why should I worry? This is an exercise in assimilation. In principle we must be able to assimilate all discords whatever. So the movement of modern music, towards ever more and more discordant forms, which is the result of the advance guard of humanity trying to find out what must be the next thing to be assimilated; then if we wish to be contemporary, in our understanding level, we will have to learn how to assimilate those discords. This doesn't mean that every discordant music is good, but it does mean that good discordant music exists, and that discord is relative. When you can assimilate it without discomfort it is no discord to you, because it means that your sensorium has now become so elastic, so unstiff, so ungrooved, that its assimilation power is absolute. When your assimilation power is absolute, then you can communicate with the Absolute directly. 74'51

If you want to communicate with the [demihur? 74'55], with the cosmic logos, you must reduce yourself to the fundamental of the macrocosmos. If you want to communicate with the Absolute. the Godhead, beyond that, you must reduce yourself still further in your groove fixation. You must be prepared to face all discords that are presented to you. This is only another aspect to take up your cross daily, because a cross for you is simply an irritant, and an irritant is simply, for you, a discord. And when you can assimilate the discords that the advance guard of composers are producing, or in the field of painting the great abstract painters like Picasso, when you can assimilate that is simply means you are becoming more and more sensitive to higher and higher significances. They are really vibrational functions of the Absolute. 75'50

Now there's a question here about - we've talked a lot about it - what is music? Does it echo a cosmic function, and is it true there can be music that kills, heals, etc. We've already said that for an ordinary person who hasn't practiced, a discord can quite easily disrupt. Ultrasonic experiments of

today are aiming to produce other new methods of disintegrating people by harmonic interference. Killing is very easy by music, and so is healing, and both of these functions were known to the ancients, and they used different instruments. If you read in the Old Testament the list of different instruments that shall be sounded in temple services, and then you listen to those instruments, you'll find that each instrument has a certain quality of tone which is a function of the harmonics in it, and that acts upon specific parts of the organism. You notice in one of those electric organ things they have in public houses, that they have a certain quality of note, and they put the vowel OO on it, specifically, to make it a wooing sound, and the result is, that it sounds something like a saxophone, which is fabricated for the same purpose. 77'20

Now the relation of the vowel sounds to the pitches of notes is very important, and internal to any vowel there are certain harmonics, and they respond to other notes at different parts of the cosmic series, and also they affect parts of your own organism. So you can play a note, and modify the cavity in which it sounds, and thus produce a vowel, as you do with, say, a wah wah mute on a trumpet, and that produces certain harmonics that act on certain centres in the body. Thus the sound that a saxophone gives to you actually acts on lower centres when a sound that an oboe gives to you acts on higher centres. One's good if you want to take the veil, the other's good if you're going to the Plaza. Can you produce any peculiar sounds on your instrument?

RW: Well I do all the time.

EH: Deliberately - vowel changes. Now, music, we'll have a look at music and see what it is. Music is the food of love, the substance of the universe. This is the power in its moving function. This 'U' [EH pronounces it 'oo'] means go. This is the resultant of the pushing through the substance, which produces the vibrations, so if you imagine there's 'U' - it's a euphemism - here is the substance [M], roundabout, and this 'U' is pushing forwards through it, and the result is an issue [S]. Certain frequencies are produced - these are harmonics, and you know that we get this from the Muses, and they all came under the same function, because the Muses of the Greek myths are really resonance functions of the Absolute. But remember because the Absolute substance is an intelligent substance the Muses really exist as intelligences. They can be evoked as intelligences. They can impart their wisdom as intelligences. The K sound at the end is the limiting factor of it - here is the precise application. Music [Eugene seems to be spelling it Musik] is then this controlling [K]of the points [I] issues [S] of the urge [U] in the substance [M]. 80'06

Now you see immediately that as the fundamental of the universe is vibrating in all its parts simultaneously, there is a vast chord, the one that somebody struck once on an organ, and when the harmonics of that chord are taken out and serialised they constitute the great melodies that the composers have produced. A melody is simply the serialisation of selected harmonics out of the absolute fundamental, and music, today, signifies all that is implied in the effect on the ear of the substantial motions and their resultants, in a closed system, systematised specifically for human hearing. 81'03

So when we take in a given period a musical form, then say a sonata form, the IK will signify that form, and this function here is the substantial [M], which is going to vibrate with the power [U] which is inserted and produced this melodic series. So if we take Beethoven 9th or something, and crush it onto a gramophone record, by playing all the notes at once, and sound that, that is how it sounds to God. It's a lovely sound. You have to be very sensitive to hear [.....81'45]. That's the way Mozart heard his compositions before he got them on the paper - in the block. It's a very peculiar experience, and in it, while the whole thing is playing simultaneously, the observer, the self, has the power to deliberately step up any harmonic in it, without stopping the simultaneity of presentation of the rest of it, and by stepping it up, he communicates with different levels of being. 82'16

So in the same way with the two men who had a fundamental existence, namely a gross physical one, with which they were in contact, and this one was able to do this, and this not - this one can, if he wants to be incommunicable or secret, he can deliberately step this one up. He can step this octave up which this man doesn't know about, and every time this man asks a question that nudges him, with an elbow, he can reply with a flood of strange words, so that he can remain out of communication deliberately, and this is the way the hierarchy of the universe is maintained. If you look at the mitre of the bishop in heraldry, there's a nice bishop's mitre for you, it has a couple of tapes on the escutcheon - they come out through the bottom, through there. Now this signifies the mouth, and these two tapes signify double talk, signifies getting on another harmonic than the one you are on, so that although an answer is given to the question, it is the one that is interpretable by the man who wants it, and if you want to be a real archbishop you have to be able to talk all the time on another harmonic, and the other fellow must feel inferior because he can tell by your serious face that you're saying something intelligent, and he doesn't know what. 83'44

Now the only way to get into communication with him is to become progressively more and more sensitive, and this is where asceticism was introduced, as a misinterpretation of what was needed. We are not to destroy this fundamental rhythm, which is the body. What we are to do is to become more and more conscious of the harmonics within it. Instead of beating the body with sticks, if we lie down and feel the pulse in the body, feel the blood move, and having felt that feel the way it locates in different parts of the body when we change our ideas, and then we feel for the flow of nervous impulses in the body, this is an ascetic practice, not whipping it, or beating it, but increasing the sensitivity of it, until eventually we have an organ that can strike that mighty chord, the one simultaneous super symphony. Now all depends on increasing sensitivity. 84'51

If we take a circle and call that the sidereal circle [.....], and here is the solar one, and here is the terrestrial one - this is a nice simplified diagram - then you can see immediately that there's a fundamental, for the sidereal system, a fundamental for the solar system which is a partial of the sidereal, and a fundamental of the earth system, which is a partial of the solar and of the sidereal. So in effect we can say that a human being on earth is more sensitive than the solar system itself, and than the sidereal system. A man has been put on earth as a being to develop all internal resonances, so that he can serve as a reciprocal centre for the absolute fundamental to become aware of itself. When the Absolute strikes the sidereal it gets a reaction, whereby it knows itself at the sidereal level, which is as pure form, in the Platonic sense, but when it strikes into the solar it gets a reaction which is volitional. So this is like the idea, or thought structure, and this is like the volitional impulse. It then knows it is a being of idea and will. But when it strikes onto the planetary centre it is then aware that there is a body, which can respond to will and idea impulses, and so the man returns to the Absolute what has been filtered through the sidereal sphere, through the solar sphere, to the terrestrial, and by meditating on his origin, he meditates on the solar and the sidereal and the Absolute, and completes the circle. He then becomes a vehicle of the Absolute on earth, and he's then called the Son of Man, and the Son of Man, if you read in the Gospel of Matthew, is going to do some very marvellous things. 87'13

Every time he can increase his harmonic sensitivity within, he is becoming more and more aware of the fine ripples which are in the Absolute. [87'27silence on the recording... 87'35] Remember that when the wind blows on the sea it produces the fine ripples first, so the high frequencies represented by the letter aleph, here, are very very high frequencies, quite unconscious to man, but very conscious at their own level. When they come into the sidereal sphere they change their frequency and wavelength, when they come into the solar they go slower, and when they get into the earth they're very slow, and that is the term of those frequencies. So the earth then constitutes a peculiar fundamental for all the harmonics outside there. Just as the sidereal has its own fundamental, and the solar has, and the terrestrial has, so, because the higher frequencies there serve as harmonics to the sidereal, and they as harmonics to the solar, and they as harmonics to the

terrestrial, the terrestrial constitutes a reflected fundamental of the Absolute. So that the man then is the turning point for the whole process, and as man is becoming progressively more and more aware of these high frequencies of the aleph level, so he is subdividing his own substance, and becoming more and more aware of the internal resonances of his highest harmonics. 89'09

From the practical point of view it is a good thing to listen to music. It is a good thing to listen to good modern music, with plenty of discords in them, and to train yourself to assimilate them. In the end you'll actually enjoy them, and although they make other people ill they'll make you well. They make them ill, initially, because they're set. They're in the groove. They can assimilate a nice, comfortable dominant you see following a tonic. It sounds lovely to them, but the moment you start cutting down on the internal intervals, then they become progressively more uncomfortable, and the same men will become progressively more uncomfortable when they are presented with subsidiary problems in daily life. In other words almost anything can irritate them in daily life, because it is simply for the reflex of the sonic equivalent of their day. Their daily life is discordant, because the composer is an advance guard. He is giving you the zeitgeist at the sound level, like a painter does at the visual level. So the more you can learn to assimilate those discordances, so called, the more your internal harmonics must become stepped up more and more, until in the end you can choose a harmonic, and you can respond to it deliberately by act of will. 90'39

Now if you would be so good, Mr Watson I'd like you to play again, and you can pizzicato [pluck] the note, if you like of course, and I want, when the note is dying down nearly to nothing, I want everybody to listen for the harmonics. And I want plenty of time allowed, so they can know that that harmonic swells on its own account, when the fundamental has died down to a certain pitch.

RW: Yes. I was just [.....] deathly quiet, because it's tricky to hear. [RW plucks the string - and again]

EW: Would you mind standing in the middle [.....] there?

RW: No

EW: Let everyone have an equal chance. I'd like the back of it [.....] [RW plucks the string again - and again] A very clear one came in then. Did you notice?

RW: I'll try one of the other strings. It's just possible that they may speak better. In the manufacturer's strings some strings are perfectly made, and you get wonderful harmonics. Some are not so good. I'll try the centre one [.....] long while. [Plucks a different string.] Yes this string is better. This'll [.....] [Plucks the string again] 92'47

EH: Listen to it when you think it's stopped. It hasn't. It's still going on now. Listen because it's when the fundamental has practically ceased that you can hear higher and higher harmonics coming in in their own times. Imagine the thing is vibrating over a very very wide arc at first, and you cannot hear the harmonics then, because the fundamental is killing them, and as it diminishes, its vibrations - it passes through various points at which the harmonics can chime in, and you will suddenly hear them swell out. So keep listening until you can hear nothing and then listen again. [RW plucks the string - and again]. 94'02

Well, you notice that when the initial impulse of the fundamental dies down to a certain level, then a harmonic steps up. If you keep listening, and on certain instruments where it has a very very high degree of resonance in the material - remember those things [the strings] are gut, and therefore not themselves naturally very resonant. They're made like that so they can sound human, not too hard and clear like metallic strings. When you get the appropriate resonant material you will hear a series

of harmonics, and if you listen to them you will discover that they're actually playing a melody. That is to say that one note will come in and disappear, and another one will come in and disappear, and then the first one will chip in again, and then disappear. There is actually a melodic sequence going on all the time. 95'00

If you put a chord down on the piano - very gently without striking the strings, you just lift the dampers off the strings - and then you strike another chord, of a certain kind, on the piano in different positions, then you will get a series of harmonics, like you do here. There is no material in the universe, no matter what it is, that doesn't have a harmonic series within it, and constitutes itself a fundamental, which is a harmonic of a larger fundamental, so that the tiniest internal atomic particle is itself a fundamental with harmonics within it, and, is itself a harmonic of a fundamental - the atom, that of a molecular group, and so on, up to bigger bodies. And therefore to touch any part of the universe is to touch all, through their internal resonances, because we have, at some level, an identical note, at a certain intensity, which is a harmonic of a fundamental that runs through the whole universe. 96'16

Now if you think of this in psychological terms you will know that your psyche is a substance, that it occupies a definite amount of space, actually, at any given level of development, that it has octaves within it, and it has these thirds within it. which give the fifths - the dominants, and so on, which are the key notes of further ones, and therefore inside the psyche, inside that soul substance, you have every conceivable note in the universe, and through each note a means of communicating with every level of beings in the universe. Now remember that the Absolute substance is substance, intelligence and capacity for motion. There is no substance that is not threefold in that way, which means wherever there is a harmonic there is an intelligent being, fighting to preserve itself, so that when you apply another note to it, which is discordant with it, you will cause a reaction, an attempt to restake itself on the part of that being. 97'44

Now every being is intelligent at its own level, which means at the higher frequencies - we represent in this diagram the terrestrial frequencies, and then the solar frequencies - the beings of the solar order have higher resonances than those of the terrestrially orientated. A materialistically minded man responds to an external stimulus. He's at a very low level. If he can inhibit that by understanding it he passes on to the volitional level, and becomes aware that he is receiving energy through harmonic resonances from the sun. If he passes through to the sidereal level he begins to receive ideas - inventions can come here. The impulse to do something with them comes from here. If he wants to be an absolute philosopher, he will have to get the resonances if the aleph, outside. 98'53

It is done always by an increase of sensitivity, and first of all for the terrestrial man he must inhibit the mechanical response, which is caused by the simple collision at the material end, and that forces him onto the will centre, because it is only by act of will that he can inhibit the mechanical response of his gross material body. When he becomes conscious of his will as a power, which can interfere, he is already resonating at the solar level. During moments of free will he is a solar being. During moments of pure contemplation, in pure geometrical contemplation of absolute geometry, he is at the sidereal level limit, beyond which there is only absoluteness, which contains in itself the three processes, in pure actuality. 99'55

So from the point of view of practice, the collision of material bodies, which causes motion, which is not determined from inside, has to be overcome. One must inhibit so that the collision reaction is not allowed to dictate the behaviour of the physical body, and this forces you onto the volitional level, which is the solar level. Then when you have inhibited it, the energy that you have saved will begin to differentiate in you, and give rise to ideas. Initially the ideas will be what you should have said really to put him in his place. But you inhibit those also, and they then become absolute

Platonic ideas, that is the higher thinking centre that Gurdjieff is referring to. This one is the higher volitional centre. Most people think they are willing, when they are simply reacting. This has to be cured first before true willing can be contacted. But if you know that when you do will freely, which is when you are not reacting - you've been under provocation, you have inhibited it, you have decided deliberately not to react in that way, you have changed the mode of reaction, you have qualitatively changed it so that it is not in any sense what it was, it isn't revenge disguised - then you have become aware of the solar intelligence. And when you become established in that you cannot get trapped - you cannot be forced to reincarnate, to react to the physical level. You are really a free will at that level, and then all you need to do is apply your free will to the macrocosmic sphere, whereupon all sorts of ideas from the macrocosmic sphere will flood into the being giving rise to all manner of strange inventions. 102'05

Now is that clear that we have now gone through the harmonic outline. It's a very rough outline. We've had some excellent demonstrations of harmonics, so that we have an objective reference in our mind, which tell us these things really exist. They are not theories, they are facts, and therefore we can orientate the will towards becoming aware of these resonances. It is a fact that that string, when struck, without fingers on it at all, gives forth a certain note called the fundamental. It is a fact that when the finger is lightly placed on it in certain positions, it gives forth other notes, which become progressively, less and less earthy, more and more celestial and beautiful, and therefore the vibration of the whole is containing all the subsidiary vibrations, and all we need to do, to become wise, to become aware of the top level frequencies of the macrocosmos, is to increase sensitivity. We are not to imagine that there is anything whatever to be made. We don't have to make anything new. We merely have to become sensitive to what is. There is no new thing under the sun. We have to become sensitive. 103'34

So we do not have to create freedom. We merely have to become sensitive to the level from which freedom operates. We are only in bondage because we are being stimulated from outside, and we are identified with it, with a low level frequency. We become free by dissociation, by reciting 'the observer is not the observed'. Aleph is the observer, and to remember that fact is to dissociate, from the idea, from the volition, from the physical reaction, till when we have pure consciousness, utterly undetermined, and the pure consciousness, in its utter indetermination, gives us the possibility of what is called the non-categorical imperative. That is to say we can do what we like. Remember that Kant gave us a categorical imperative which is quite unmanageable. He said we should act in every case, as we conceive that all rational men would act. It is a very long job to conceive all rational men, and put them in the situation and then work out precisely what they would do, while the bus is running over you. Whereas with the non-categorical imperative, it's absolutely imperative you act immediately - that is without mediation of idea, or stimulus. The action comes from the absolute in your own centre, straight out. It doesn't wait for a stimulus. It doesn't wait to be annoyed. It doesn't wait to be pleased. It always comes from the inside out. It is unconditioned, it is immediate, it is spontaneous, it is initiative. Everybody's looking for initiative, and it lies always in the same place, inside, in increased sensitivity to the internal harmonics. 105'41

There's a question here about what can be understood concerning the greatest writers of music. Gurdjieff seemed to insist that all were machines, some very fine machines. Yet it is difficult to believe that they were not unconsciously becoming conscious, which we are told cannot happen. Well of course, not everything can be said at once, and therefore Gurdjieff had to say some things first, and, if he'd have been able to say everything simultaneously, which he should have done, nobody would have been able to listen, so some things were left unsaid. Can a man unconsciously become conscious? and the answer is no, by definition. Let's draw a man. There's a man, in his simplest form - legs, arms, intelligent [.....]. He's a nosy man, very curious - probably a sly man. Now this man is in process of becoming conscious. What does it mean? If you use a term without knowing what it means, it doesn't help. We have two vocabularies. One contains about ninety per

cent of our words, and the other about ten per cent - that is in an educated person. In an ordinary person one hundred per cent are passive. A passive word is a word that you think you know the meaning of, but cannot define. An active word is a word that you can accurately define. That's the difference. 107'26

Now there aren't many words that most people can accurately define. So when we're talking about unconsciousness, then we have to look at it very carefully, First of all the UN may be a negative, and it may not. Magically, it is not a negative at all - it means the power moving, but not rotating. When it rotates it makes a being and is called OM. So if it doesn't rotate there is no object, but there is a ceaseless eternal surge of energy. Now CON is 'with', and the root of C is here, the OUS at the end, and the NESS - the essence of the issue of visual activity together in the undefined, the uncircumscribed. Unless the serpent gets the tail in his mouth he has not made an object, and if he does he's called OM, and if he doesn't he's called UN-conscious, the 'unu' of the Egyptians. Unu means a hare, which means the intuition, the intuitive level. This one doesn't rotate, it doesn't get in a groove, it just propagates like this, ceaselessly all over the place. To be unconscious is not to define. Now the question is, can we unconsciously become conscious? The answer is no, because at the precise moment that you pass from a simple push propagation, non-rotating, to the rotation of the same power, you change the term. So that is unconscious and that is conscious. Can that become that? The answer is no. That is eternally defined as open. That is eternally defined as closed. So that cannot become that, and that is what Gurdjieff meant. 109'31

So you cannot unconsciously become conscious, but you can only consciously become conscious. Here is your life force going along, now this is UN, pushing all [.....] little euphemisms [.....]. It goes about, but still unconscious. Can it become conscious? Only by going like that and that isn't UN any more. So at the precise moment that it rotates it's OM-conscious, not UN-conscious. So, when we think about the great musicians, they were unconscious. They had vehicles, very fine vehicles, machines, and because those machines were very very fine they responded to the unconscious, and the unconscious is searching for something worthwhile for doing that with. Beethoven is searching. After he'd written a symphony he thought he'd write another, but different, and so on, and he's searching for a symphony, for a s-s-symphony, you see, and he goes all over the place. Tentatively tries a bit there - no, that's not it - you see, there's a little one he wrote, he'd rather burn that one. There's another one, and s/o he goes about. Every time he turns round, and looks at it, and sees if it is worth penning, then his is OM-conscious, and if he decides it's no good he goes back into the UN-conscious again, and when he finally picks on a nice form and says 'that is it', he's OM-conscious, writes it down on the paper, which objectifies it permanently, and it's not an unconscious act - it is a conscious act. 111'30

So we have to be very very careful how we interpret a word then. No man can become unconsciously conscious, but what he's searching for in the unconscious movement, is that which would be worth while becoming conscious about. Now women are much better at this than men because they are unconscious, in this sense, that they don't like circumscriptions and definitions intellectual, but they have a feeling there's something worthwhile somewhere, so they go searching for it. At a certain point they may rotate round it and say 'well that'll do for now' so they [.....] and take it with them like this [.....] and if they see another one that's a bit more harmonic [.....] then they go like that. In the old days of the matriarchies they'd collect about five thousand each, and then burn the lot at the stake when they found a better one. So the men had to fight them for it, and that is the great battle of the patriarchs and the matriarchs, but the rearguard action is going on in America. Nevertheless if we study the nature of this unconsciousness, we are studying the nature which women have and deliberately retain. It's part of the tacit conspiracy. 112'58

This primary urge which refuses to define itself is part of the absolute purpose, because we cannot have it all defining itself - that would pin it, and that would be death. So we have to keep, not to be

mathematical half of it, as undefined, and the undefined is to receive and test the defined. So the defining part, called male, is rushing about setting up systems. You know Gurdjieff says there are no systems, but nevertheless there is a system, because system means saviour, for a time - system means saviour, for a time. There's a saviour for a time, but it won't save you for ever, and in that sense there is no absolute system. Nevertheless there is an Absolute system, because, if you understand the Absolute, all systems are contained within it, and each one has an application for a given time. 114'02

So if the Absolute polarises itself as continuous search - without definition, as woman - and polarises itself as definition maker - as man - and continuously inserts the definitions into the substance of the search, then the search takes it, feeds it, develops it, and throws it out again to make a fresh start. Now every being has inside him, a woman, which is his urge, and a man, which is her reason, and the polarisation of this, in each person, means that every person is at a certain level in the androgyne ladder. In the Tao De Jing it says if you can be an man and remain a woman your work is finished. It means, if you can define, without getting tied up in your definition, you can remain with something over free to go out of the definition, and make another one. Beethoven could do it, because when he'd written the Fifth he didn't put his pen down and say 'that's good enough for popular taste'. He went on to make something that people - people in the technical sense - think isn't quite so good as the Fifth. He thought otherwise. And so he goes on transcending all previous levels. And so Picasso could paint very very respectably, as a young man. He's gone beyond that level, and some other people think that he used to be able to paint and now cannot, whereas he can still paint as well as he ever did then, plus something that at that time he was unaware of. 115'54

So we have to do both these things, and in the reciprocal relation of the two, the defined and the UN-defined - the eternal search and the temporal finding - rise this progression. Now that is a note - every definition is a note. Note is an anagram of tone, isn't it? Note is a mark that you make to signify a tone, and the tone is a T-one, or crucified unity. It's a harmonic. That's a tone, and that's a tone, and that's a tone. So, when we look at the string vibrating, the fact that it moves, like this, means there is a certain amount of urge in it. But the fact that it has nodal terminations, which finite it, means there's a certain amount of form in it. So it is UN-conscious in its vibration, across that median line, and it is OM-conscious in being a definite note, and you cannot find any being whatever that is not simultaneously doing both. So there should really be no quarrel between the two. 117'17

I think it's time to go now. Thank you very much Mr Watson. 117'31

RW: Thank you.

EH: I think you'll all know what harmonics are now. You'll have to bring your fiddle next time.

[A woman's voice replies.....]

EH: A wire one [.....] [pause in the recording]an idea that they're back. It's that idea that keeps the receiving apparatus stiff. At the moment you say 'I am going to receive them, they're good for me, they're moving me towards higher resonances, towards spirit, towards freedom', at that moment you can relax, on the organ of hearing, and it will begin to assimilate it. And then you will discover a totally different kind of experience, and you'll be very amused to find other people incapable of assimilating what to you is a definite beauty. Because you cannot get simultaneity of consciousness unless you can assimilate discords. Supposing we take a note and its fifth, and play them together. What actually happens to the mind is that it listens to the tonic, and to the dominant, alternately like this. If you're watching your mind it does not listen to both at once. It listens to one

and the other, very quickly. Now when you put a discord there, you're forced to do this very quickly - hence part of the distress. It knocks you onto a higher frequency. When you get a really bad discord, less than a semitone, it forces you to do this, and at a certain level suddenly it becomes simultaneous for you, and that simultaneity of awareness passes right through the whole of your psychic experience, because once you have the concept in you, it will do the work for you. You've then got a real machine, a very fine machine, the kind that Gurdjieff himself was working to make in his own body, because you have to have a fine machine. The evolution of spirit is the evolution of suitable vehicles. That's all. 119'48

The body, this thing, has to be made able to respond, and then spirit can involve. So it's no good having spirit evolving if there are no vehicles to receive it. It is a physical impossibility. So the more discords you can assimilate, and the closer you can - deliberately listen to them, and try to find out the meaning of it - of a quarter tone, D and the quarter tone above it, and listen to it. Why does it annoy you? What does it mean? Psychologically it means so far, no farther, you see. It has a psychological value. It's like somebody saying 'I'm nearly your friend, but not quite'. What do you do with it? 'Well I'll go to blazes. If you're not my friend I can't trust you. If I can't trust you don't be near me.' But trusting people is another method of going to sleep. Supposing you said 'I can't trust anybody, therefore I will be alert', because T-rust, you see, means 'the law is engraved on'. It means that inertic - could anybody trust Christ?

RW: No.

EH: Because he said 'the spirit bloweth where it listeth'. He could do anything. Nobody could trust him, because he was above the law. You can only trust a man who is fully engrammed in the law, but the man who is above the law, you don't need to trust him. You know that whatever he does it will be alright, absolutely. 121'17

1 Aliquot, adj. and n. from Latin aliquantum, 'somewhat', from ali-us, 'other', and quantus, 'how great'.

1) adj. Dividing exactly without remainder: 6 is an aliquot part of 18.

2) n. An aliquot number.

2 Hiranyagarbha: golden egg

