

Rationalization in Law and Music : A comparison based
on a theory of Max Weber



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This paper was written as part of the exam for the course of Sociology and Law in Athens Law School, in 1987. I translated it now, for you, and I am aware that it is far from perfect, as a paper. Yet, I found the topic original and therefore very interesting; this has been one of my favorite papers in the Law School. I send it to you as an example of the creative work I could do, knowing that it has nothing to do with law and medicine. I believe that the other written work I am sending satisfies the demands of your Committee.

(most notes have been omitted)

TABLE OF CONTENTS

1. What is rational? What is rationalization?
2. The meaning of rationality
3. Law and Rationalization
4. Irrational Elements in Law
5. Evolution
6. Sources of Rationalization
7. Irrational Elements in contemporary penal law
8. Why is law rationalized
9. The rationalization of music-Introduction
10. The rationalization of the musical language
11. Classical as rational music
12. Irrational Elements in classical music
13. Factors of musical rationalization
14. After classical music
15. Law and music : A parallel journey?

1. What is rational? What is rationalization?

Weber¹ classifies human action as emotional² (X shoots A when he sees him with his wife), traditional³ (R goes to church every Sunday) evaluative⁴ (B never lies as honesty is his highest value) and rational⁵ (P picks the best product at the lowest price possible).

A human action is rational when the means used are the most effective to achieve a particular end. The end by itself is not important; the means are. The scientific methods are the classic example of rational human actions.

Weber admits that no human action can be solely rational or emotional; the above types are "ideal types". The final characterization depends on which type of action appears as more powerful.

Weber was more interested in social relations than in human actions by themselves. A whole family can act traditionally whereas a laboratory should usually function rationally. A social system as a whole could be rational, when it is based on an organization of its ends in relation to the means used if they are chosen as the most effective ones. The societies are rational when they match their beliefs to their practices and form a interrelated and an interdependent unit.⁶

According to J. Freund⁷

rationality-rationalization means the possibility of society's control on technology with progressive effectiveness. There is a process of rationalization every time that man uses his data with more rational methods than he used to until then. Rationalization is a "processus" and not a condition ("etat"). Weber sees rationalization everywhere, in time and space. Everything could be "rationalized" : the laboratory, a

1. Basic Sociology, eds Kentauros, 1983.

2. "affectuel" in German.

3.

4. "wertrational" in German.

5. "Zweckrational" in German.

6. S. Hekman, Max Weber and Contemporary Social Theory Oxford.

7. J.Freund, La rationalisation du droit selon Max Weber.

romantic relationship, a company, a religion, science and art : law and music.

2. The meaning of rationality

"Inner logic of social institutions - effective combination of means and ends"- that is the first meaning of rationalization⁸.

Rationality II refers to the rules of typical logic, the logical system of the scientific methods. Then, there is "rationality III", where rational is the social system that adheres to the universal standards and requirements of human life (which supposedly exist).

Critics of "rationality II" argue that the institutions of our society reflect the logic of OUR society. The methods that contemporary scientists use to analyze the system of another society are products of contemporary typical logic - for another system that "thinks" (operates) differently our method has no meaning at all. 1700 chords are "normal" only for 1700 and after - what we accept, like "the ceiling is up and the floor is down" have value only for our society and for the particular time and space.

Ionesco⁹ notices that there are differences in the same logical system, and he calls this as the "impossible of communication" : ".....if on says grandmother and another one says grandmother is SEEMS like they are talking about the same person - the truth is they are referring to a totally different one!!!!!!". The professor in Ionesco's play "La Leçon" (the class) points that if an Italian says "my country" he means Italy but an American means the US. Therefore, words cannot reveal meanings, because they ignore the personal chords that words strike in every different person. Simon de Beauvoir adds that the impossibility of communication stems from the fact that we all have a separate body, condemned from the very beginning to solitude.

The above pessimistic ideas could make us doubt the validity of our rules of logic, but Weber argues that we have, at least, to accept the value of rationality I and II, as they form the least troublesome part of our science and they should also be accepted by non-western civilizations. Anyway, western scientific methods really are more effective when it comes to the growing

8. S.Hakman, id.

9. Martin Esslin, The theatre of the absurd, eds Theory 1983.

of plants and trees and we have to acknowledge at least this fact.

Weber, using the second meaning of rationalization (logical methods), analyses whether the social systems are rational according to rationality's first meaning. A first and obvious observation is that we live in a rational State : the quest for more effective means to an end is apparent in every form of social action. Rationalization is Progress : "...mythology fades away, taboos disappear...magic, color, mystery, all gone in front of the light of a cool scientific day....."¹⁰

F. Schiller calls this phenomenon "disenchantment" of the western man's soul. Rationalization extinguishes traditional behavior and the unity caused by common religious practices. Rationalization touches the very meaning of the world; for the civilized man, death has no meaning, because it is insignificant as an event in front of the never lasting progress. The circle becomes a straight line towards the indefinite. That is why Weber researched with passion all the irrational elements in law and in music.

3. Law and Rationalization

Law's rationalization is a part of a general rationalization which is, as mentioned, an important feature of contemporary civilization. Law "cannot escape from it's environment"¹¹

because between law and economy, politics and religion there is a substantial relationship.

Rationalization in law means a process from the irrational - material law towards rational - formal law. these four types of law (rational, irrational, material, formal) are "ideal types", as Weber calls them.

The Law is irrational when "decisions depend on moral, political, social or religious beliefs or feelings". Human justice centered on "God's will" means that certain moral ideas about "just cause" control a trial. Irrational law is characterized by its multiple rules on various cases that lack any kind of unity.

10. Introduction of Don Martindale - J. Riedel from the book "The social and rational foundations of music" by Max weber, 1949.

11. J. Freund, La rationalisation du droit, id.

The Law is rational when it is systematized, codified, designed in purpose : subjective rights stem from objective rules. Rational law has no relationship with old traditions. Its main characteristic is generalization : it rules unknown number of cases. As example, there is the Civil Code (of Greece, France e.t.c.)

The Law is formal when its purpose is, among others, to clarify its concepts, so that it reflects a legal theory where every external effect of political, financial or customary character has no place. Legal is the "exact", following its own logic. "Les normes obeissent exclusivement a la coherence de l' ordre juridique abstrait et se laissent deduire les uns des autres" ¹²

Material law considers non-legal factors. This kind of law does not serve its own inner abstract logic but the demands of the historical society in which it purports to impose its legal rules. "Legitimate" is the law which can stand within the existent situation. Its application is tied to political, religious e.t.c. trends.

Consequently, there are the following combinations :

Rational-Formal Law : systematic, abstract rules - interpretation of rules according to the special directions of the legal doctrine, by matching a certain set of facts to abstract legal concepts as p.e. "informed consent".

Irrational-Formal Law : a typical procedure to reach a decision, but the substantive law is not a Code or a statute but a "revelation" or a "omen". Weber calls irrational-formal the law of "responsa" of the "jurisconsultes" (commentaries in the law of England, 1765). The English judge has until now a power to create law - p.e. example, Lord Denning.

Rational-Material Law : Decisions on the basis of a sacred text, as the Bible or the Coran or the demands of morality, politics or ideology. The judge cannot decide on what he thinks is just : the book limits his powers.

Irrational - Material Law : "Kadi-justiz" : The judge decides on his own feeling of justice, following no legal procedure at all. The muslim judge who decides in the market-place as he likes, following his personal inspiration, or the various "legal prophets" of the past are a typical example.

12. J. Freund, id.

4. Irrational Elements in Law

Legal prophets, as Weber's "kadi", relatives who acted as arbitrators in Homer's poetry, Wu and Wei (magicians, priests, tatoists) of China, "Mudschtahiden" of Islam, "imam" of Persia, "urim", "tumin", "tabis" of judeic law : all are "judges" who applied irrational law. God gave "thora" to Moses, Jeus gave laws to Minoa, Appolo sent laws to Lukourgos, Athena to Zalleukus e.t.c.¹³

Weber considered as "kadi's justice" the justice of the Athenian Democracy. All the above are irrational elements in ancient laws; there are also in current laws, sometimes in purpose, as in music.

5. Evolution.

The law was rationalized in two ways :

- a. Internal rationalization, from the legal professionals.
- b. External rationalization, due to the influence of economic, social e.t.c. factors.

Weber divided the rationalization of law in four parts:

a. Law : A product of charismatic revelation from legal "prophets", as the druides of Gaule. The formal procedure may be of extreme importance : in magic, a typical mistake, a wrong move, destroys the procedure. The source of law is the inspiration of the prophet.

b. Law : a product of tradition. The judge follows the traditional solutions since his own power is based on tradition. In Rome, in the beginning the praetor organized the procedure - in jure - then comes the judge - apud judicem - and together they consult the jurisconsultes. The result is a case-law which in time is rationalized (from irrational-formal to rational). Today, several countries do not codify their laws, instead they consider precedents as law. This is, according to Weber, an irrational element of law.

c. Law : A product of popular, cosmic and God's power. Princes or religious authorities intervened in the procedures annulling decisions which put their power into doubt in order to stabilize their order, the status quo, the social or economic condition. Thrasimachus had centuries before declared that law is the will of the powerful. The prerogatives of the English kings, the

13. N, Kourakis, Penal Law.

interrogative powers of the catholic church, the powers of the French monarchies offer classic examples of a law that was being rationalized not formally but typically. Anyway, the codifications were not far away, under the pressure of the civil society.

d. 18th century : systematization and specialization of law. Rational Law, with the characteristics mentioned above.

6. Sources of Rationalization.

Weber refers to three sources of rationalization :

- a. Roman Law of jurisconsultes.
- b. Code Napoleon.
- c. Anglosaxonic practices.

JURISCONSULTES

Roman Law soon freed itself from the influence of the church (rationalization). After the first legal professionals, the first schools appear, where the trainees (auditores) learn more of the legal language than the legal practice. The jurisconsultes were specialized in legal terminology, which developed because one mistake in language lead to legal defeat. For the first time the legal concepts evolve and the abstract legal theories are developed. Priority is given to the "matching" of facts to abstract legal ideas. Nevertheless, Roman Law is known for its case-by-case character. Its rationalization was reinforced with Gaius Institutes, Digeste and Pandectes. This process of rationalization will continue in Bysance, but the source of the first codifications remain in the Roman Law.

CODE NAPOLEON

The French Civil Code was a prototype for many legislations which followed it : the French Code was free not only from any kind of religious influence but also from every previous legal tradition.

ANGLOSAXONIC PRACTICES

The English judge did not have to "match" facts to legal concepts, but his influence on legal rationalization is apparent : he developed a tradition which in its turn helped the stabilization of the legal world. Practical rules which were laid down then are as important for the rationalization of law as the abstract legal concepts of the Romans. Judicial power, in addi-

tion, was developed then as a separate and special power, far from religious power.

EXAMPLE : EVIDENCE AND PENAL LAW

Penal law (evidence) passed through four phases :¹⁴
1. Religious phase.

Middle Ages' ORDEAL (judicium dei) : Proof of innocence involved external signs, the power that God gives the innocent. They would throw the defendant in the river, hands and legs tied steadily. If he survived, he was guilty (and they burned him!!!) If he did not survive, he was innocent (and drowned!!!).

2. Legal Proof

The Inquisition's system was much more formal than the ordeals; Proof was the defendant's admission of the crime. Also, the testimony of two allegedly eye-witnesses from a high societal level bound the court to declare the defendant guilty. The admissions of course were the result of torture; "coactus voluit" : "even if he was tortured, he expressed his will" . At least, the judges declared that they were in fact searching for the truth : veritas delicti. Weber notes that the Inquisition advanced the rationalization of law because of this alleged quest for the truth. Still, Voltaire states : "...If the Archbishop of Canterbury and the king of England testified that they saw me eating my parents for breakfast, this does not mean that I am guilty but that they both should be sent immediately at Bentham's hospital....."

3. Free evaluation of evidence

Purpose: the truth. Means : Everything that could be useful for the revelation of what really happened. This sounds like a fair system, still Feuerbach observes that it offers the possibility to a judge to declare, at the end of a trial, that "I am persuaded because.....I am persuaded"!!!

4. Proof by scientific methods

Rules of logic, blood and paternity tests, DNA tests e.t.c are proof beyond doubt; all shall, in the future, be proven with the aid of science. Machines like the "lie-detectors", though, that in the past were considered as scientific proof, now offer limited help for the revelation of the truth - in Greece, lie-detectors

14. Ferri, in Kourakis, id.

are forbidden as torture.

7. Irrational elements in contemporary penal law

Weber sustained that it will be impossible to eliminate all the irrational elements from the law. J. Freund mentions the example of the American judge: his decision is his creation. Experts, psychiatrists, specialists, all intervene in the criminal procedure and affect it, even if they are not lawyers. Perhaps the most irrational element in law is the jury. Weber observed that the jury is an authentic replicate of "kadi-justiz", as each member will, in fact, decide according to substantive and not formal law. It could be easy to deceive a jury member; juries can be misled, and they do not even have to explain their decisions. In these cases, the defendant could be a victim of a trial-farce. In 1967 juries were banned in Greece, as pure courts of law, and now only three jurors are allowed in severe misdemeanor trials - they are also the minority, as four judges are also responsible for the decision.

Should we extinguish all irrational elements of law? May be not. Perhaps these irrational features contribute, along with all the rational ones, to the justice and the power of the system.

8. Why is law rationalized?

Today, law is rational and formal -typical, systematic, codified, objective and generally applied, because only if law has this character it could serve the free market and capitalism. As Weber states, the civilians demanded this kind of law. How would the system operate today under "kadi-justiz". Still, Weber notes that formal law today legalizes the inequality in economic power. So, the principle of equality between the litigants, p.e., acts as a factor towards the stabilization of inequality, since the litigants can have totally different financial means and strength. By putting both on the same position, the powerful is protected whereas the weak is not. Therefore, Weber declares that this principle is contrary to the principle of democracy, because it "...attacks the independence of the practice of law, of people from the decisions of their fellow citizens..."¹⁵

Rationalization today is considered as progress, value. The enterprise, basis of our system, could never develop without rational law. Investments need the legal "suit" to guarantee their safety. So, all our financial structures are legalized. Weber states that

15. Weber, Sociology of Law.

capitalism needs a law-machine. Current law is being rationalized everyday. It is bound to succumb to bureaucracy; more and more laws will be produced; the number of lawyers will constantly increase, as will the various specializations of law. As doctors will study for twenty years to devote their career to surgery upon one part of an organ, one can imagine that lawyers will study equally for twenty years to try only cases of p.e. environmental law. Is it too much to imagine the world of George Orwell (1984), where judges are "the administrators" (working for the government), following summary procedures, prosecuting those who dare to think or feel - a wonderful new world....

THE RATIONALIZATION OF MUSIC

9. Introduction : rationalization in art?

The gothic arches are more rational than the egyptian columns : the gothic arches divide more equally the pressure of the ceiling on the sides of the building. Means and ends match much more to science than to art, where feelings, emotions seem much more important.

Still, art has its own means of expression : colors, notes, objects, and art has also its own purposes. Rationalization in art is the constant effort to achieve more expressive possibilities, like the effort to enrich our "expressive vocabulary", along with the constant systematization and organization of artistic means, no matter if these are musical instruments or computers... These two purposes though in reality are conflicting. Weber saw that the expressive flexibility and the codified rational process form two opposing ends : means finally influence quality, not only quantity, language offers thousands of words, but these particular words-therefore, it is true that a music like the western classical music offered tremendous expressive possibilities which did not exist before, but also obliged the composer to adhere to its own rules of harmony and composition.

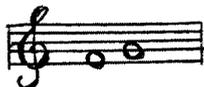
Probably most of the people around us would not imagine another musical vocabulary than the classical one. If we want to describe any other musical system than the western one, we have to "translate" it to our system, because it refers to another musical language. These sort of "translations" are, in a way, dangerous, especially in music - sounds loose their identity much more than words because sounds mean nothing by themselves, as words do. The sound of 1700 is not the sound of the primitive society. At least we have to acknowledge the relative value of these "translations" along with the

lack of any adequate alternative.

10. The rationalization of the musical language

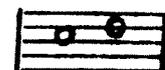
a. Which is the language?

A scale consists of at least TWO notes : the first one was the ditonic one.



The distance between these two notes was usually one tone¹⁶, but it could also be a third¹⁷.

Songs sung by people thousands of years ago, written on the ditonic scale are the most ancient music we have now¹⁸.

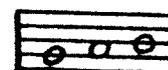
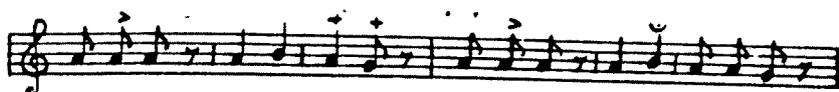


a song of the Veddhas of Ceylon.

scale

Similar songs are saved by the tribes of the eastern Siberia, the Indians of California, the Fouegees of South America and of tribes of the Uralia mountains.

Adding one note, we have the tritonic scale. The two intervals rarely are the same (tones or semi-tones).



song by the Modocs, South Oregon, on a tritonic scale.

The most common scale in the primitive society was the pentatonic one. This scale was also very popular in all other societies except the western and the ancient Greek one. There exist a number of pentatonic scale, depending on their intervals. One of the most common ones is the Chinese one : all the black chords of the piano.

The pentatonic scale offers many more notes, so a much larger musical vocabulary for the composer. Scotch music, African and American Indian music is based on the pentatonic scale.

16. Like the distance between C and D (do and re).

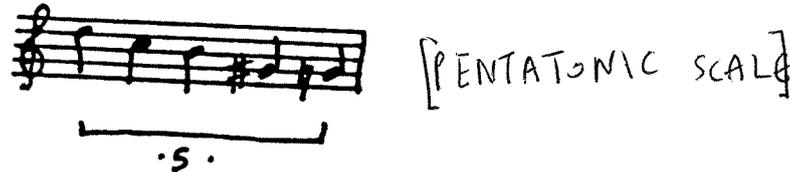
17. C and E (do and mi)

18. See Bruno Nettl, Music in Primitive Societies.

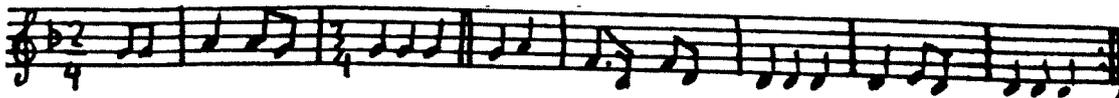


Uitoto song.

The scale



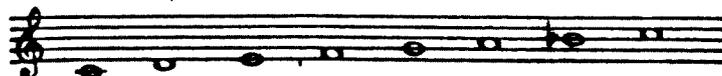
And a interesting song of the Pawnees (song of the



Weber contrasted the pentatonic scale to the musical system of the ancient Greece. The basis of this system was the "tetrachord", which combines with other "tetrachords" in various ways and results into the systems of "τέλειον ἑλάττω" ("perfect minor"), "τέλειον μείζων" (perfect major) and the "αμετάβητον" ("unchangeable") - depending on the first note, we also find the kind of the "διαποσσών": the "λύδειον" e.t.c.



Therefore, on the basis of the "tetrachords" and their combinations there are many "ways", "τρόποι" - sorts of "διαποσσών" (tonalities). Example: the "mixolydic way" (μειξολυδικός τρόπος).



With these notes and intervals, the composer wrote p.e. an hymn to Apollo.

Weber, after comparing these systems, concluded that the western classical one is the most rational from all its predecessors. Classical is considered the music that was written between the 1700 and the 1800, apt. To

see why, read on.

II. Classical as rational music.

"We cannot talk about rational music unless we talk about a music that is autonomous, an art that does not relate to any religion but exists only for artistic reasons..."¹⁹

, to express the inner emotional world of the artist... This autonomy is the first step towards rationalization of music. For the ancient Greeks, music was dedicated to the Gods - hymns, "dithirambi", "prosodia" e.t.c. - or to special social events, as deaths ("ενθουσιασμοι"), matrimonies, etc. In Rome and Bysance, the same was happening. Even in Bach also wrote church music, classical music has always been describing a story, and still, first freed itself from the story.

Weber believes that musical autonomy was not possible before the appearance of tonality and of classical harmony, two of the most important features of the western classical music. Tonality means the "logical organization of chords around a tonical center"²⁰ - a concert in A bemol is a concert where the tonic note is A bemol and its chords consist of notes belonging to the A bemol scale. Tonical harmony is the "relationship between the chords, that sound one after the other, that are written according to a tonal center"²¹. Beware of the word "relationship" - we do not care about one chord by itself (as the impressionists did) but the way these chords interrelate. Here lies the rational element of the classical music: the relationship between the chords has to follow certain rules, so that we could use for these chords the terms of "right" or "wrong".



RIGHT



WRONG : parallel fifths

But WHY is it wrong to have two parallel fifths, one after another, in two chords? It is considered wrong because the sound of parallel fifths disturbs the aesthetic feeling of the auditor, whose pleasure is the purpose of the art of music; therefore, it is wrong as

19. Freund, id.

20. K.Small, Music and Society.

21. id.

a ineffective means to an end. Similarly, after a first chord (say A maj) and its fifth (E maj), the auditor expects the first one, as the end.

Berstein preferred the word "exact" to the word "classical" when he talked about western classical music.²²

The truth is that all the music that was composed during that period has to be interpreted exactly as it was originally written, where one could play a popular song in many ways, all admissible. Classical music meant perfection of the rules, music composed during a period when everybody was searching for the perfect shapes and for harmony.

One cannot understand how "rational" classical music can be unless he looks into Bach's music. The rules of a fugue's composition look exactly like "the printed instructions you get with a refrigerator"²³ In the fugue n. 2 from the "well tempered clavier", the "theme" ("tema", "sujet", the motif that is basic for the particular fugue) starts from the left hand. The right hand repeats the motif two meters later and five notes higher (instead of C-B-C, G-F-G), while the left enters with the "anti-thema" (contre-sujet), a second motif. Thema and anti-thema interplay until the end. At the beginning of the second page of the two-page fugue, the tonality changes from C min to D maj, then return to C min and end with the major motif-thema. The above are similar in all Bach's fugues.

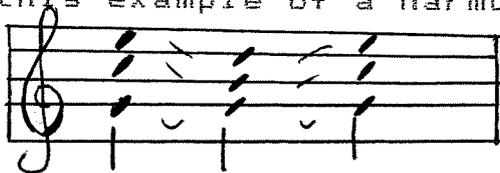
"Printed instructions?" Then why doesn't anybody compose fugues of similar artistic value? True, even people without a trace of talent can write down fugues perfectly correct, according to the rules of traditional harmony. Here starts to be apparent that something could be wrong with the rationalization of music...

The fact that two or three notes can sound simultaneously may appear as normal for us, but this was not so in the past. Musicians originally knew only of single, one-voice melodies or two, or of "heterophony": one melody for all the voices. The idea, though, of many different voices-melodies that sound simultaneously is a unique characteristic of the classical music : POLYVOCALITY - POLYSONORITY. Weber calls this as the point of no return, because at the start musicians had to invent a system to write down the

22. L. Bernstein, Young People's Concerts.

23. Bernstein, id.

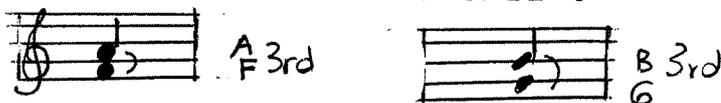
music, it would be impossible to remember it all by heart. Therefore, our musical system is based on the octave. Follow this example of a harmony problem :



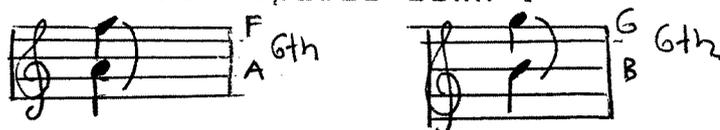
It may seem simple and this one is, however look at a fugue with three voices : they move with multiple different ways.

All that was needed was twelve notes....later, all instruments spoke the same language as the voices, all compositions, even the way people thought about music and sounds.

Why is this musical language based on mathematics, as often said? Lets see these two thirds :



...and let's turn them upside down :



If we add to all intervals their opposite interval, the result is always nine : seconds become sevenths and fourths become fifths.

Still, this music is not only related to mathematics but also to physics, especially acoustics. The frequencies of musical tones, the distances between them, the way human ear perceives them, all are specifically and perfectly designed, so that sounds are as perfect as possible...

Consequently, this is no simple music; its complexity is obvious, due firstly to its polyphony. Add the one hundred organs of a symphonic orchestra to one hundred singers, where everyone has his own music to interpret and the result is really very complex. Here are four meters of music - only four :

With great spirit

CAPRICCIO
ESPAGNOLE
RIMSKY-KORSAKOFF

The image shows a musical score for guitar, divided into two main sections. The top section is labeled 'Big Tune' and includes parts for 'Second', 'Spanish', and 'Rhythm'. The bottom section is labeled 'Little Tune'. The score consists of multiple staves with musical notation, including notes, rests, and dynamic markings. The 'Big Tune' section features a complex rhythmic pattern with many sixteenth notes, while the 'Little Tune' section has a more melodic and simpler rhythmic structure.

This has nothing to do, of course, with the Vedda's song, from Ceylon...even if many musicologists question the superiority of western music²⁴ at least its complexity cannot be compared to p.e. the african music.

12. Irrational elements in classical music

Weber analyzed very carefully all the irrational elements of western music and reached the conclusion that because of the given state of the octave, they cannot be eliminated, unless people create a new musical language. There is a crucial asymmetry in the octave which is composed by a fourth and a fifth. The tritone F - B is also a problem, since three tones come the one after the other. The greater problem is, according to Weber, the famous seventh chord .

The seventh is a very common chord. The trouble is that there is a abnormal interval in it, composed by its first and last note. This should be an harmonic mistake, but it is not. Indeed, p.e. if G and F sound together, they consist a dissonance, they sound oddly in our ears, however with the addition of B and D, they compose a seventh chord, which is acceptable.

These are exactly the irrational intervals that give

24. J. Becker, "Is Western Art Music Superior?", 3 The Musical Quarterly, 1986, eds McMillan, New York.

drama and passion to a musical piece. Freund adds that, even if somebody would expect their elimination, they flourished instead in classical music, to advance its expressive flexibility. they by no means are traces of an ancient musical language : they are there in purpose, they act like "acid on metal" - modern music would not exist without them.

Classical music offered, with its harmonies, tonalities and polyvocality, the fundamental technique ("means") with which the dramatic result becomes possible. For Classical music composers, the end was double faceted : organized structure of music and expression of feelings. For Stravinsky, though, "music has no meaning outside music...²⁵if it has a meaning, if it seems that it expresses something, that is an illusion..." Musicians of the 1700 and the 1800 found the best language to express what they wanted. That is why Weber claims that classical was more rational than its predecessors. Classical music can change the mood of the auditor, can create in him feelings of tension (seventh chord) or relaxation (return to the tonic chord); can sound tragic, ironic (Haydn), strange or funny, depending on the series of chords, on the motifs, e.t.c. - tonal music is the conscious organization of time with sounds".

13. FACTORS OF MUSICAL RATIONALIZATION

Musical notation was not the only rationalization factor; Weber mentions the "virtuosi" played, due to their innovations, a crucial role. Also, the musical instrument technicians, like Stradivarius, Amati, Specialists in Cremona and Brescia of Italy, in their journey towards a finer violin or cello, changed the sounds themselves. A change in the violin's appearance, so that it looks better lead to changes in the sounds produced. Among others Weber mentions magicians, language, church and classifies them as the extra-musical factors of rationalization. It is not at all a coincidence that tonal harmony developed at a time when people were also searching for physical laws of universal value - this was the world of scientific rationalization, the world of Logic. "Classical music reflects the image that gave birth to science".

25. "Chronicle of my life", I. Stravinsky, New York 1962.

14. AFTER CLASSICAL MUSIC

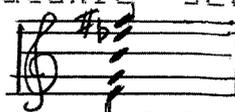
It is not now difficult to understand the limits of the classical musical language. P.e. we cannot sing an interval smatter than the semi-tone. Still, the 1/4 of the tone exists : Arabs are well aware of this fact. Their music is more rational in this, since their musical vocabulary is richer. On the other hand, an Arab could only play open octaves on a piano and he wouldn't be touched at all by the Bach's fugue that is mentioned above.

Musicians like Debussy or Stravinsky changed what they could change : not the notation, but the tonality. Impressionism freed the composers from the classical harmony. Debussy composes on the ancient mixoludic way:



Prelude, by Claude Debussy.

He also uses the ancient pentatonic scale. He would compose chords like this one:



He would start with the right hand following a certain key and the left hand would accompany on a different key: all this would be totally inadmissible in classical harmony.

Music today though is generally a mass-culture. Records that sell by the millions represent an apparent change of the "purpose" of art. This music does not purport to express feelings; there comes the end of the aesthetic drama of the Western man. What is music now for people? It is an escape from reality, a preparation for another working day. A safety valve to release from tension.

A change in purpose equals to a change in means. Popular songs today last three minutes and usually sound very similar. The rhythms are stable. Music is easy to listen to. Its purpose is to amuse the auditor, never to make him think. We all know how a song will end. Synthesizers sound like orchestras. Their tones are checked by "tonometres" and are 100% correct. Details are insignificant. they could be replaced and no one would figure out that they were so. The "motifs" are as simple as possible and they repeat themselves constantly.

. Nev-er gon-na *cresc.* give you- up, - *f* nev-er gon-na let you- down — Nev-er gon-na

run a-round- and de- sert you.

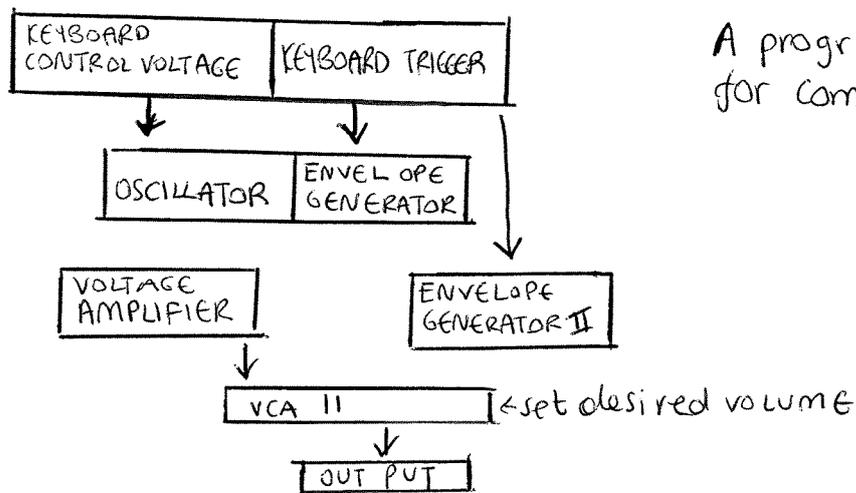
Rick Astley's "Never gonna give you up", Top Chart 1987.

I believe that these sort of songs achieve their purpose perfectly : the listener does not have to think or feel anything special, he just listens. It is also impossible to describe the thousands of sounds that a synthesizer can produce : the sound of bells, of sledges running on the snow, of water drops e.t.c. Our century's mass culture is rationalized to a very high degree. We still compose music using the same "vocabulary" but this may be so because we have not found a new one yet. Perhaps the intervention of the computers in musical compositions will result to a change. A computer can transform a composition for four organs into a single line (graphic):

AMPLITUDE



When the voltage passes through the ampufiers, our ear will hear four voices and not one. Any number of musical events produce one musical wave. So, even a opera with 100 organs and 100 singers could be thus transformed into one long single line. Perhaps soon a code will appear, so that a new composer will write music using lines on the computer - what could that mean for music's future? Classical pieces could be "translated" and stored into computers - synthesizers can store music like that. Music could look like this :



A program (musicat) for computers

Synthesizers, finally, could be eternally rationalized, as "...no matter how many units of a certain kind a studio has, it will always need one more..."

LAW AND MUSIC : A PARALLEL JOURNEY?

Every society has its music and its laws, as it has its arts and sciences. One could support that p.e. as law became more rational, because it was freed from religious influences and from the idea that its source was God, music also became an autonomous art, when it did not exist as a part of a religious ceremony or creed. One could compare, for the above purpose, the Bible to the Code Napoleon and the ancient Greek "ᾠαίον" to a prelude. In 1700 tonality and harmony reigned, and in the same time the School of Natural Law (Grotius, Puffendorf, Hobbs) declares that man is a rational being by nature. While the western classical music is at its peak, Montesquieu, Beccaria, Bentham and others demand a more rational treatment of criminals and search laws of universal value, the laws of nature, so that they could be enforced in their society. It was then that the penalty of death was abrogated in Russia (1767) and Sweden (1779) and Austria (1787).

Law was rationalized by law professionals; music by virtuosi and musical organ makers. The Church (Inquisition, Bysance, Catholic Church) was a strong influence on both law and music. Legal language and musical notation were equally factors of rationalization. Behind all the above hides the same man. Today, law and music are as rational as they have never been, both represent the most rational means to achieve their ends and both serve the existent economic and social system.

We cannot predict the future; maybe the process of rationalization will expand and touch every area of our human existence. Our hopes should be, though, that this will not happen. All is not logic; from the point of view of happiness, we do not know if we have progressed, in comparison to older, ancient societies, even if we have this enormous number of facilities around us. We need irrationality; we need fairy tales and myths, mysteries and magic, in order to survive, we need to believe that Santa Claus will arrive this year and that miracles can happen. Otherwise, we will all be condemned to live in the ice world of logical devices and machines, all far away from each other.