

# **MÚSICA & Visualização da Informação**



**Quantas vezes você ouviu uma  
música e pensou...**

Que música  
genial!

**Descrever** visualmente algo que não é visual.

(Jason Forrest)

# 5 SINFONIA DE BEETHOVEN [www.superpartituras.com.br](http://www.superpartituras.com.br)

(Em ritmo de Rock)

Arranjo: Antônio Célio - 21/01/2013

♩ = 116

L. Beethoven

Musical score for Melodia and Violão (Acoustic Guitar) in C major, 4/4 time, featuring a rock rhythm.

**Melodia:**

- Measure 1: *mf* (moderato), Mod. Wheel (Ch 11 80)
- Measure 2: *mf*
- Measure 3: *mf*
- Measure 4: *mf*

**Violão:**

- Measure 1: *mf*
- Measure 2: *mf*
- Measure 3: *mf*
- Measure 4: *mf*

**Chords:**

- Am
- E<sup>7</sup>
- Am
- E<sup>7</sup>
- Am
- E<sup>7</sup>

# Representando dados musicais

## Elementos da Musicalidade:

Harmonia

**Ritmo**

Melodia

Timbre

- Reconhecimento de padrões
- Notas, acordes, intervallos
- Representação do tempo

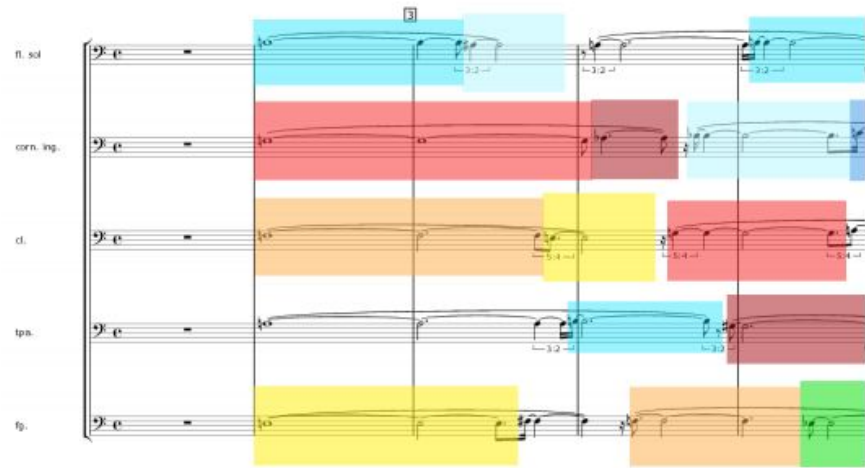


Fig. 2 – Aplicativo para visualização da peça de Ligeti com apenas algumas das camadas de cores ativadas.

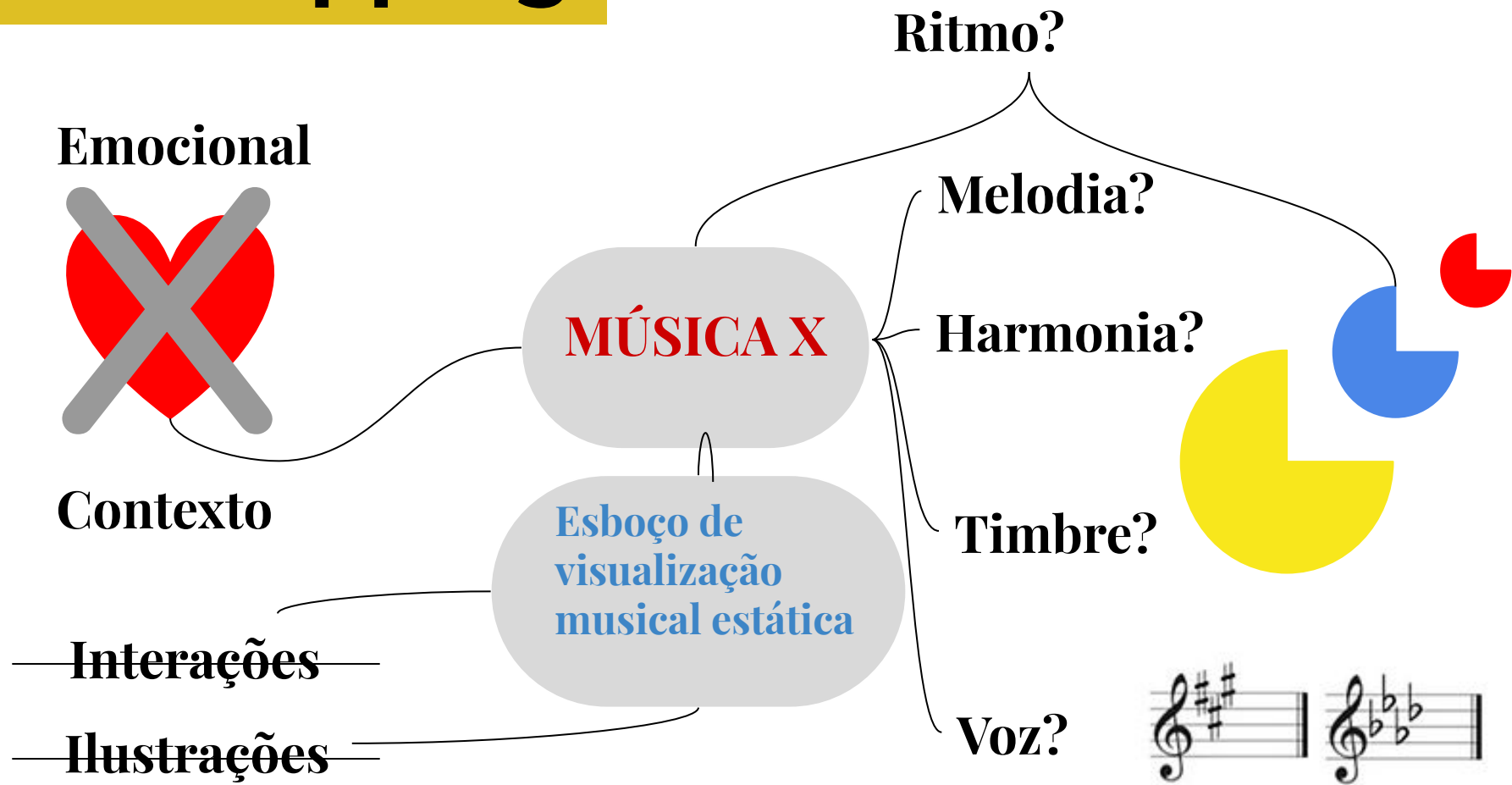


Fig. 3 – Visão da peça inteira com todas as camadas de cores sobrepostas.

# Critérios

- Foco nos Elementos da musicalidade
- Desenho Estático (Quadro musical)

# Mind Mapping



**Escolha uma música que você acha genial...**

...e descreva suas informações  
musicais



**Idealize e desenhe alguma forma de  
representar a sua música Genial**

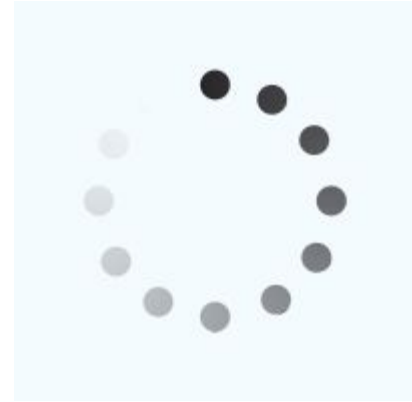
---



—

Imagine que eu sou uma pessoa que não conhece essa música. E com o material dado, tente explicar com desenhos **o que torna essa música genial.**

3-5 minutos para pensar



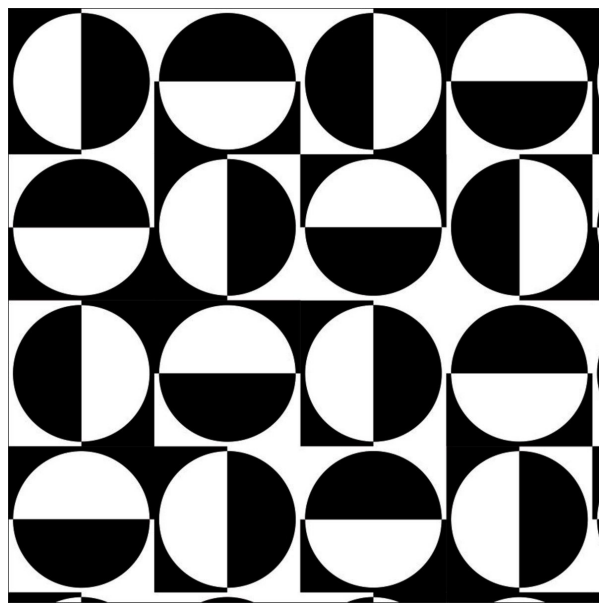
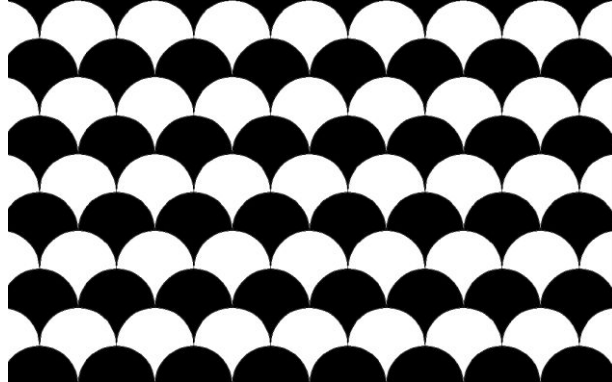
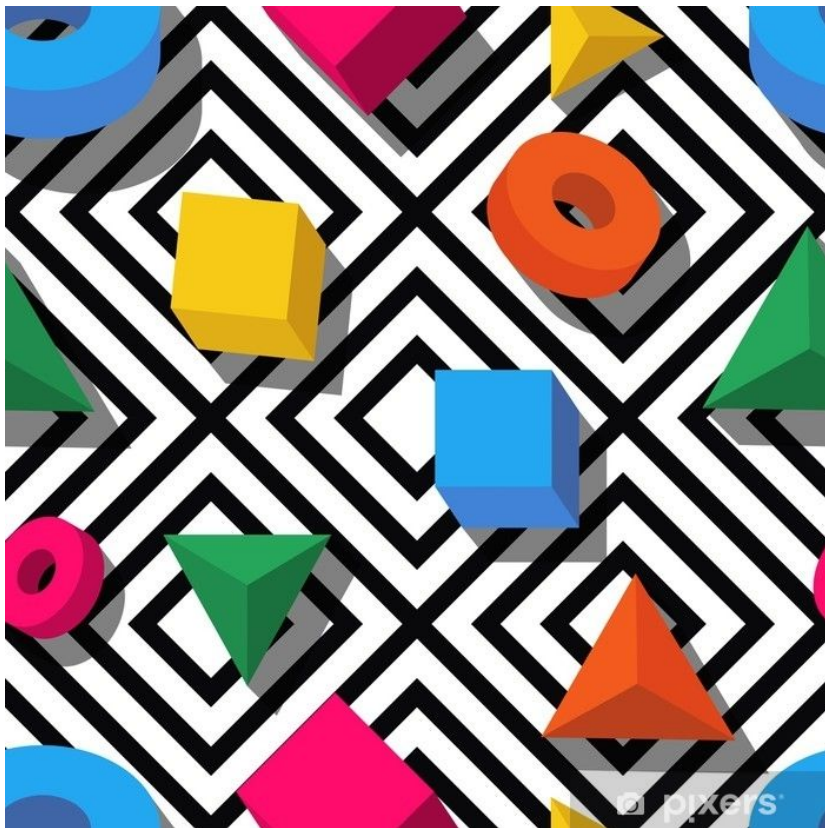
# Visualizando a música

---

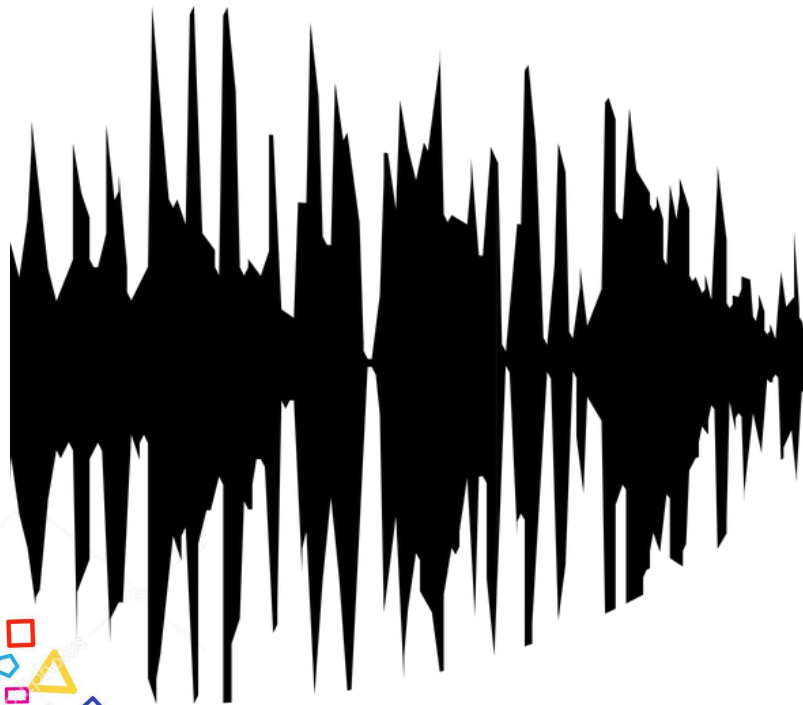
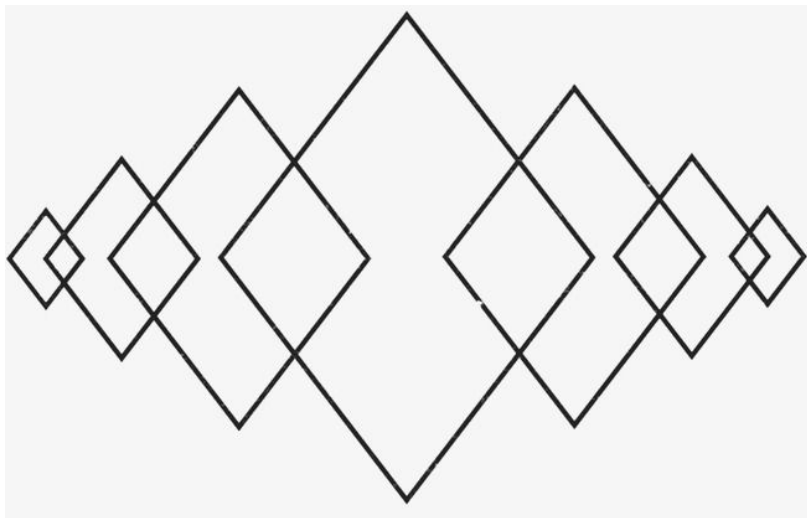
**Música, é uma combinação de sons e silêncios de maneira organizada**

**Dificuldades em desenhar a  
música?**

---

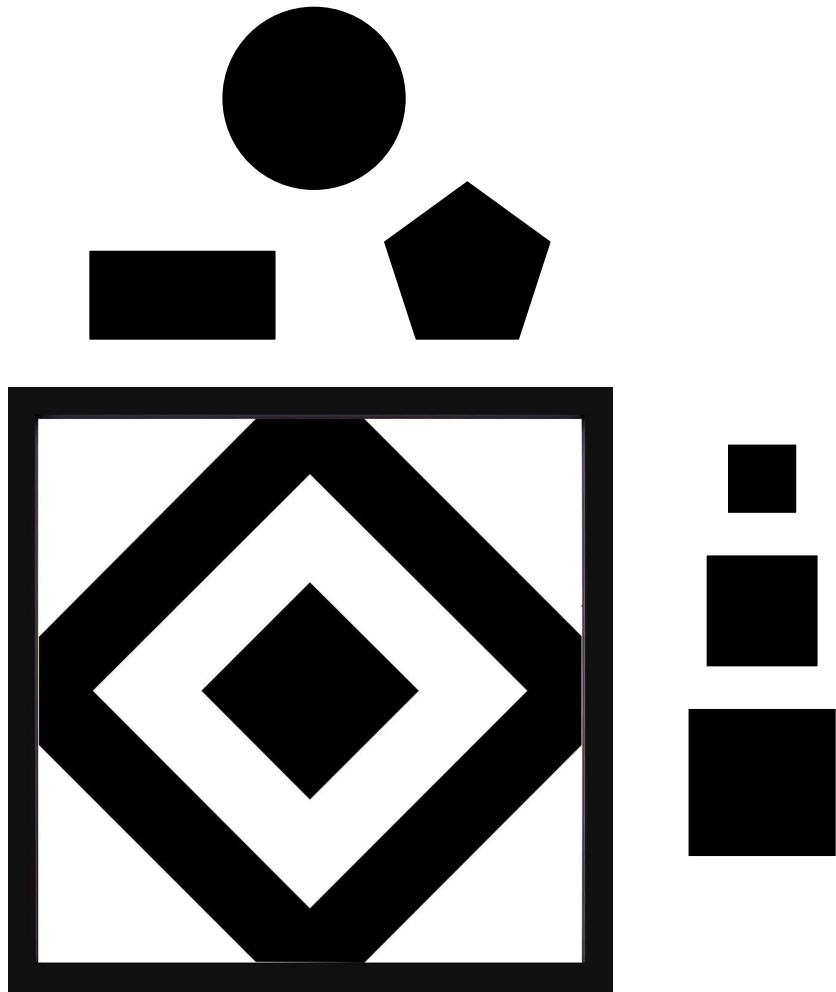
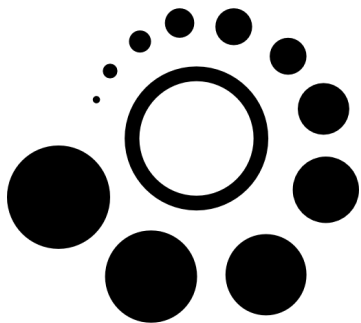
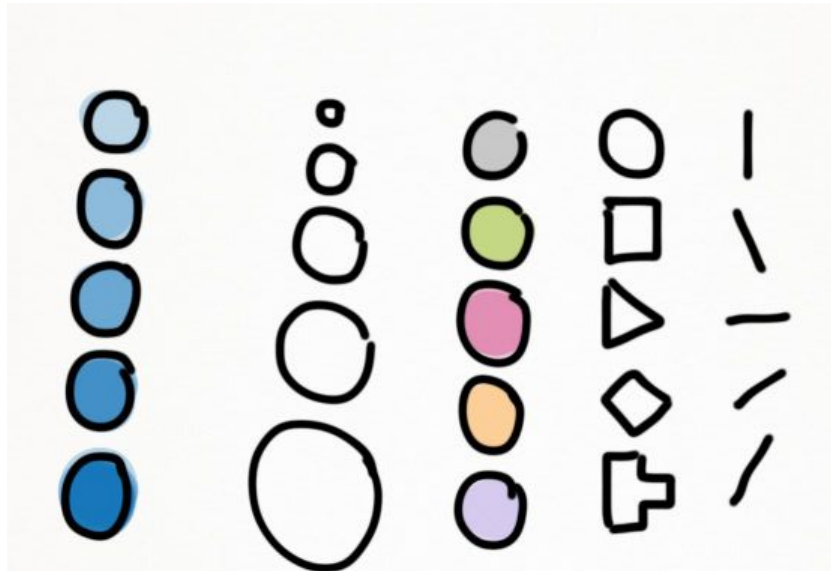


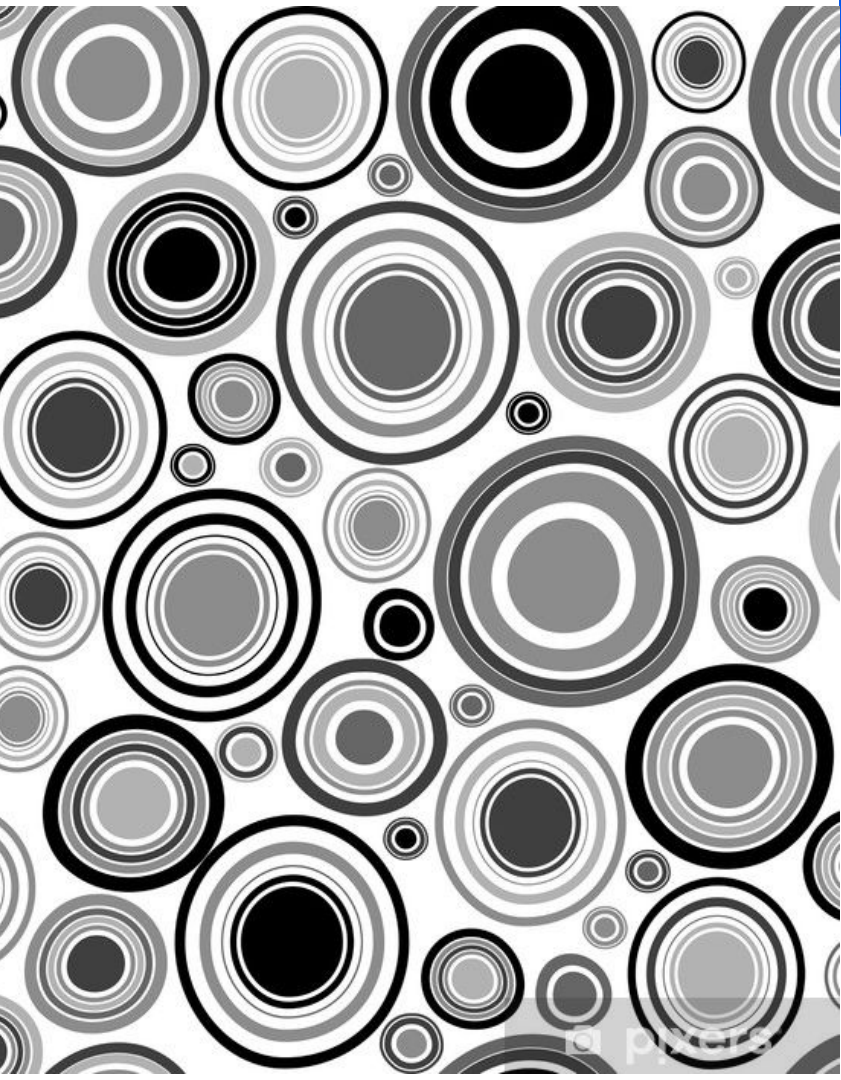




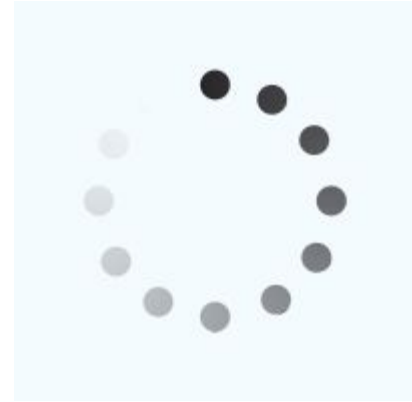
**Waw form**







2 minutos para pensar





**Sua ideia**

# Discussão

**Explique** o desenho que você fez e porque  
essa música é genial

# Problema de pesquisa

Quais problemas na área de música merecem novas formas de visualizações?

**Objetivo:** Visualizar e Sistematizar informações musicais, automatizando processos para gerar base de dados para computação criativa



... 2009.2.27 DEFENSE CHIEF LIFTS BAN ON PICTURES OF COFFINS: IN A REVERSAL OF POLICY, THE PENTAGON WILL ALLOW THE PRESS TO PHOTOGRAPH THE FLAG-DRAPE COFFINS OF AMERICA... 2009.2.27 U.S., PAKISTAN AND AFGHANISTAN TO HOLD REGULAR TALKS: THE PLAN WAS ANNOUNCED AFTER THREE DAYS OF MEETINGS, WHICH TOUCHED ON SENSITIVE ISSUES LIKE AMERICAN AIRSTRIKES AT A JEWISH COMMUNITY CENTER IN CARACAS, BUT NOBODY WAS HURT IN THE BLAST. 2009.2.27 WORLD BRIEFING THE AMERICAS: VENEZUELA: ATTACK ON JEWISH CENTER: ASSAILANTS SE TOWN OF MALAKAL KILLED AT LEAST 14 CIVILIANS AND SCORES OF F... 2009.2.27 IRAQ HANDS DEATH PENALTY TO 28 CULTISTS FOR ATTACKS: A MESSIANIC SHIITE FRINGE GROUP HAS TAKEN S EARLY AS 1.5 MILLION YEARS AGO AN ANCESTRAL SPECIES HAD ALREADY EVOLVED THE FEET AND WALKING GAIT OF MODERN HUMANS. 2009.2.27 MALBORK JOURNAL: FACING GERMAN SUFFERIN N A TURKISH AIRLINES JET CRASH-LANDED ON WEDNESDAY WERE FOUR AMERICANS AND FIVE TURKS. DUTCH OFFICIALS SAID. 2009.2.27 U.S. WILL GIVE QAEDA SUSPECT A CIVILIAN TRIAL: THE CH VOLVED THE FEET AND WALKING GAIT OF MODERN HUMANS. 2009.2.27 WORLD BRIEFING THE AMERICAS: VENEZUELA: ATTACK ON JEWISH CENTER: ASSAILANTS THREW AN EXPLOSIVE AT A JEWIS E IT HARDER FOR IRAQ TO PAY FOR SERVICES AND COULD AFFECT U.S. PLANS FOR WITHDRAWAL. 2009.2.27 DEFENSE CHIEF LIFTS BAN ON PICTURES OF COFFINS: IN A REVERSAL OF POLICY, THE PRO-SHARIF DEMONSTRATIONS SPREAD ACROSS PUNJAB: THOUSANDS OF SUPPORTERS OF THE OPPOSITION LEADER NAWAZ SHARIF PROTESTED THE SUPREME COURT. 2009.2.27 BOOK CASTS HARS DONOR MONEY INTO HIS PERSONAL BANK ACCOU... 2009.2.27 IRAQ HANDS DEATH PENALTY TO 28 CULTISTS FOR ATTACKS: A MESSIANIC SHIITE FRINGE GROUP HAS TAKEN AIM AT SHIITE PILGRIMS A LP. GUARDSMEN IN THE WEST BANK ARE TRAINING TO ENFORCE LAW AND ORDER. 2009.2.27 VATICAN SAYS BISHOP FELL SHORT: THE VATICAN SAID THAT THE APOLOGY BY A BISHOP WHO HAS DE LIFTS BAN ON PICTURES OF COFFINS: IN A REVERSAL OF POLICY, THE PENTAGON WILL ALLOW THE PRESS TO PHOTOGRAPH THE FLAG-DRAPE COFFINS OF AMERICA. 2009.2.27 U.S., PAKISTAN AN HE SCOPE OF THE AMER... 2009.2.27 VATICAN SAYS BISHOP FELL SHORT: THE VATICAN SAID THAT THE APOLOGY BY A BISHOP WHO HAS DENIED THE SCOPE OF THE HOLOCAUST WAS NOT SUFFICIE TRALIA. 2009.2.27 IN SOUTHEAST ASIA, THE UNEMPLOYED RETURN HOME: AS A MEETING OF THE ASSOCIATION OF SOUTHEAST ASIAN NATIONS BEGINS, THE REGION IS EXPECTING AN EXODUS OF WOI S APOLOGIZED FOR REMARKS IN WHICH HE DENIED THE... 2009.2.27 WORLD BRIEFING AFRICA: SUDAN: 14 CIVILIANS DIE DURING FIGHTING: TWO DAYS OF CLASHES BETWEEN LOCAL GOVERNMENT... 2009.2.27 CHINA SAYS U.S. DISTORTS FACTS IN REPORT ON RIGHTS: THE STATE DEPARTMENT SEES 2009.2.27 IRAQ WITHDRAWAL PLAN GAINS G.O.P. SUPPORT: PRESIDENT OBAMA IS TO AN ; MORE THAN \$11 MILLION OF INTERNATIONAL DONOR MONEY INTO HIS PERSONAL BANK ACCOU... 2009.2.27 WORLD BRIEFING EUROPE: THE NETHERLANDS: VICTIMS: THE NINE PEOPLE WHO DIED I SRI LANKA: EDITOR ACCUSED IN ATTACK: THE POLICE ARRESTED THE EDITOR OF A TAMIL-LANGUAGE NEWSPAPER DURING A FUNERAL IN COLOMBO, THE CAPITAL, ACCUSING HIM OF AIDING A REBEL ; NETHERLANDS: VICTIMS: THE NINE PEOPLE WHO DIED WHEN A TURKISH AIRLINES JET CRASH-LANDED ON WEDNESDAY WERE FOUR AMERICANS AND FIVE TURKS. DUTCH OFFICIALS SAID. 2009.2.2 ; AUSTRALIAN BUSHFIRES: FIREFIGHTERS CONTAINED EIGHT NEW BUSHFIRES IN AUSTRALIA. 2009.2.27 FIREFIGHTERS CONTAIN NEW AUSTRALIAN BUSHFIRES: FIREFIGHTERS CONTAINED EIGHT NEW BI FOUND IN BANGLADESH: POLICE COMBING THROUGH THE HEADQUARTERS OF MUTINIOUS BORDER GUARDS HERE FOUND A MASS GRAVE ON FRIDAY CONTAINING AROUND 30 BODIES. AN OFFICIAL SAID. 2 ; HARIF DEMONSTRATIONS SPREAD ACROSS PUNJAB: THOUSANDS OF SUPPORTERS OF THE OPPOSITION LEADER NAWAZ SHARIF PROTESTED THE SUPREME COURT. 2009.2.27 U.S. WILL GIVE QAEDA SU BAKILI MULUZI WAS ARRESTED AND CHARGED WITH SIPHONING MORE THAN \$11 MILLION OF INTERNATIONAL DONOR MONEY INTO HIS PERSONAL BANK ACCOU... 2009.2.27 WORLD BRIEFING ASIA: SI VS OF MEETINGS, WHICH TOUCHED ON SENSITIVE ISSUES LIKE AMERICAN AIRSTRIKES IN PAKISTAN, AND THE SCOPE OF THE AMER... 2009.2.27 FIREFIGHTERS CONTAIN NEW AUSTRALIAN BUSHFIRES RIEFING THE AMERICAS: VENEZUELA: ATTACK ON JEWISH CENTER: ASSAILANTS THREW AN EXPLOSIVE AT A JEWISH COMMUNITY CENTER IN CARACAS, BUT NOBODY WAS HURT IN THE BLAST. 2 U.S. DISTORTS FACTS IN REPORT ON RIGHTS: THE STATE DEPARTMENT SEES 2009.2.27 MASS GRAVE FOUND IN BANGLADESH: POLICE COMBING THROUGH THE HEADQUARTERS OF MUTINIOUS BORDE RIEFING UNITED NATIONS: IRANIAN REBUKES U.S. COUNTERPART: A PASSING REMARK FROM THE NEW AMERICAN AMBASSADOR TO THE UNITED NATIONS, SUSAN RICE, PROMPTED A REBUKE FROM HE HE HEADQUARTERS OF MUTINIOUS BORDER GUARDS HERE FOUND A MASS GRAVE ON FRIDAY CONTAINING AROUND 30 BODIES. AN OFFICIAL SAID. 2009.2.27 WORLD BRIEFING EUROPE: THE NETHERL GRAVE IN POLAND HAS REVEALED THAT AN UNDERSTANDING OF CIVILIAN SUFFERING IN FORMER GERMAN TERRITORIES IS STARTING... 2009.2.27 WORLD BRIEFING ASIA: SRI LANKA: EDITOR ACCU I A MASS GRAVE ON FRIDAY CONTAINING AROUND 30 BODIES. AN OFFICIAL SAID. 2009.2.27 CHINA FAILS TO HALT SALE OF LOOTED RELICS AT PARIS AUCTION: TWO BRONZE HEADS ORIGINALLY LOO ALYSTS SAY ETHNIC DIVISIONS ARE ESCALATING INTO A CRISIS THAT COULD PUT THE DAYTON ACCORDS OF 1995, WHICH ENDED A SAVAGE WAR THAT KILLED MORE THAN 1... 2009.2.26 FALLING RE RS CONTAIN NEW AUSTRALIAN BUSHFIRES: FIREFIGHTERS CONTAINED EIGHT NEW BUSHFIRES IN AUSTRALIA. 2009.2.27 U.S., PAKISTAN AND AFGHANISTAN TO HOLD REGULAR TALKS: THE PLAN WA I DOUNCED AFTER THREE DAYS OF MEETINGS, WHICH TOUCHED ON SENSITIVE ISSUES LIKE AMERICAN AIRSTRIKES IN PAKISTAN, AND THE SCOPE OF THE AMER... 2009.2.27 DEBT TESTS CANADIAN MEI ISSIONS AFTER FIERCE PROTESTS AND A FAILED LEGAL CHALLENGE... 2009.2.27 VATICAN SAYS BISHOP FELL SHORT: THE VATICAN SAID THAT THE APOLOGY BY A BISHOP WHO HAS DENIED THE SC ESS TO PHOTOGRAPH THE FLAG-DRAPE COFFINS OF AMERICA. 2009.2.27 U.S. HELPS PALESTINIANS BUILD FORCE FOR SECURITY: WITH AMERICAN HELP, GUARDSMEN IN THE WEST BANK ARE TRIN JANCIAL CRISIS AND FALLING OIL PRICES WILL MAKE IT HARDER FOR IRAQ TO PAY FOR SERVICES AND COULD AFFECT U.S. PLANS FOR WITHDRAWAL. 2009.2.27 WORLD BRIEFING ASIA: KAZAKHSTA ACING BANKRUPTCY. 2009.2.27 CHINA SAYS U.S. DISTORTS FACTS IN REPORT ON RIGHTS: THE STATE DEPARTMENT SEES 2009.2.27 PRO-SHARIF DEMONSTRATIONS SPREAD ACROSS PUNJAB: TI NEWSPAPER DURING A FUNERAL IN COLOMBO, THE CAPITAL, ACCUSING HIM OF AIDING A REBEL AIR ATTACK THERE... 2009.2.27 IRAQ HANDS DEATH PENALTY TO 28 CULTISTS FOR ATTACKS: A MES I MULUZI WAS ARRESTED AND CHARGED WITH SIPHONING MORE THAN \$11 MILLION OF INTERNATIONAL DONOR MONEY INTO HIS PERSONAL BANK ACCOU... 2009.2.27 PALESTINIAN RIVALS ANNOUNCE A CIVILIAN TRIAL: THE CHARGES WOULD MOVE THE CASE OF THE ONLY ENEMY COMBATANT TO BE HELD ON U.S. SOIL, ALI SALEH KAHLAH AL-MARRI, INTO A CIVILIAN CRIMINAL COURT. 2009.2.27 I ;S. DUTCH OFFICIALS SAID. 2009.2.27 MASS GRAVE FOUND IN BANGLADESH: POLICE COMBING THROUGH THE HEADQUARTERS OF MUTINIOUS BORDER GUARDS HERE FOUND A MASS GRAVE ON FRIDAY I COPE OF THE HOLOCAUST WAS NOT SUFFICIENT. 2009.2.27 IN SOUTHEAST ASIA, THE UNEMPLOYED RETURN HOME: AS A MEETING OF THE ASSOCIATION OF SOUTHEAST ASIAN NATIONS BEGINS, T NITY CENTER IN CARACAS, BUT NOBODY WAS HURT IN THE BLAST. 2009.2.27 DEBT TESTS CANADIAN MEDIA COMPANY: CANWEST GLOBAL COMMUNICATIONS MAY SOON BE NEARING DEFAULT ON IT IT, A COLOMBIAN POLITICIAN, IS DEPICTED AS SELFISH AND HAUGHTY IN A MEMOIR BY FELLOW HOSTAGES HELD WITH HER. 2009.2.27 VATICAN SAYS BISHOP FELL SHORT: THE VATICAN SAID THAT IF MODERN HUMANS. 2009.2.27 IRAQ HANDS DEATH PENALTY TO 28 CULTISTS FOR ATTACKS: A MESSIANIC SHIITE FRINGE GROUP HAS TAKEN AIM AT SHIITE PILGRIMS AND FOUGHT AMERICAN AND IR IS. 2.27 BISHOP OFFERS APOLOGY FOR HOLOCAUST REMARKS: BISHOP RICHARD WILLIAMSON, WHOSE RECENT REHABILITATION BY POPE BENEDICT XVI PROVOKED GLOBAL OUTRAGE, HAS APOLOGIZED BEGINS, THE REGION IS EXPECTING AN EXODUS OF WORKERS TO RETURN TO THE FAMILY FARM AS A RESU... 2009.2.27 CHINA FAILS TO HALT SALE OF LOOTED RELICS AT PARIS AUCTION: TWO BR I 2.27 FIREFIGHTERS CONTAIN NEW AUSTRALIAN BUSHFIRES: FIREFIGHTERS CONTAINED EIGHT NEW BUSHFIRES IN AUSTRALIA. 2009.2.27 CHINA FAILS TO HALT SALE OF LOOTED RELICS AT PARIS AU SU... 2009.2.27 U.S., PAKISTAN AND AFGHANISTAN TO HOLD REGULAR TALKS: THE PLAN WAS ANNOUNCED AFTER THREE DAYS OF MEETINGS, WHICH TOUCHED ON SENSITIVE ISSUES LIKE AMERICAI ONS RISE IN FRAGILE BOSNIA AS COUNTRY: ANALYSTS SAY ETHNIC DIVISIONS ARE ESCALATING INTO A CRISIS THAT COULD PUT THE DAYTON ACCORDS OF 1995, WHICH ENDED A SAVAGE WAR THAT H SMEN IN THE WEST BANK ARE TRAINING TO ENFORCE LAW AND ORDER. 2009.2.27 VATICAN SAYS BISHOP FELL SHORT: THE VATICAN SAID THAT THE APOLOGY BY A BISHOP WHO HAS DENIED THE HER. 2009.2.27 WORLD BRIEFING AFRICA: MALAWI: FORMER PRESIDENT IS ARRESTED: FORMER PRESIDENT BAKILI MULUZI WAS ARRESTED AND CHARGED WITH SIPHONING MORE THAN \$11 MILLION ; MILAN MILUTINOVIC WAS ACQUITTED. 2009.2.27 IRAQ WITHDRAWAL PLAN GAINS G.O.P. SUPPORT: PRESIDENT OBAMA IS TO ANNOUNCE THAT HE WOULD PULL COMBAT FORCES OUT BY AUGUST 20 ; IS DEPICTED AS SELFISH AND HAUGHTY IN A MEMOIR BY FELLOW HOSTAGES HELD WITH HER. 2009.2.27 MALBORK JOURNAL: FACING GERMAN SUFFERING, AND NOT LOOKING AWAY: THE DISCOVER OS: VICTIMS: THE NINE PEOPLE WHO DIED WHEN A TURKISH AIRLINES JET CRASH-LANDED ON WEDNESDAY WERE FOUR AMERICANS AND FIVE TURKS. DUTCH OFFICIALS SAID. 2009.2.27 PRO-SHARIF RI, INTO A CIVILIAN CRIMINAL COURT. 2009.2.27 DEBT TESTS CANADIAN MEDIA COMPANY: CANWEST GLOBAL COMMUNICATIONS MAY SOON BE NEARING DEFAULT ON ITS CRUSHING DEBT LOAD AND P ERN FOOT IN PREHUMANS: FOSSIL FOOTPRINTS SHOW THAT AS EARLY AS 1.5 MILLION YEARS AGO AN ANCESTRAL SPECIES HAD ALREADY EVOLVED THE FEET AND WALKING GAIT OF MODERN HUMANS. THE FORMER SERB PRESIDENT, MILAN MILUTINOVIC, WAS ACQUITTED. 2009.2.27 PRINTS SHOW A MODERN FOOT IN PREHUMANS: FOSSIL FOOTPRINTS SHOW THAT AS EARLY AS 1.5 MILLION YEARS F TO A CIVILIAN CRIMINAL COURT. 2009.2.27 MASS GRAVE FOUND IN BANGLADESH: POLICE COMBING THROUGH THE HEADQUARTERS OF MUTINIOUS BORDER GUARDS HERE FOUND A MASS GRAVE ON FRID ... 2009.2.27 DEBT TESTS CANADIAN MEDIA COMPANY: CANWEST GLOBAL COMMUNICATIONS MAY SOON BE NEARING DEFAULT ON ITS CRUSHING DEBT LOAD AND POSSIBLY FACING BANKRUPTCY. 200

},\_jd{.dgm]Q[)#gdH)QQHG?'1I3??!^P^^ yi3%XV1VTI!11%1~  
,\*ak .<\$kq;WG]QtHAQE]#)d~]\9H8s;nmqqa8aau, "y~mUAn7^^!1%XV^'  
??~^M\_ 1e9d#m9XQD<#KHM#EdYdE\da#UUW%1U#Qr`QWk MN7?Ag,?XV(=j;V%XXP  
,xadU\* - ikXQAZd#8d#kdAFJFJ?#\#3#kq4QQaWQQMH9H8UDGa3?9\*4UXY?~  
##Y?'',aqGr 'U(]Q#(4#P<PTUFje IM]WdQNPAPjU~WQ\_JFd1z,t\_?Yg(''  
,:dQHY^\",x\_ -UO#[JDXjdY3YZJR-Q5wt-.i#aQVdPNU~Sd#Fk-dTZ~;~''Y)\  
aa#e~`jaMY~,a1yJY\dy\2F,Y/jQF]C =I?]3VWhdPqWEd#eFjP\25aYUwd/?;d  
Q#P`=jQP~jdP~aP~ae~jP\dfdTd#Fdk\*3?adA21deFjMFyQe^jY\p\dt j\mdz71  
##Y'djWT:qWPqd~jdP'jFj2dj[=#RjQ('qK]P=d#F3WF+jQF9"jY'jX' (dP\'k'^  
^#3de~dj#FiU~q#P jYjP](WE]WF]C^<kU(dK?##>Wai.WdtkdE ]C 3r]i/a=z\  
djMF ;QP^jMEi#C^jFqPje}D.]MM]E<\*]9kQ#(4C4EQs3#F JMF .dE 4E](\<r<\_Mk  
WY^jde~ldH^iQP^j~jWE]~WE=]Q\_?^!yUd[]MAJQd####A#as9Qk dP U:]L?g\\_5z\  
~j#Y'jd#~qQMEqe:]M\]#E=9#(\Z]JK#k<HM1#U???"Y9P\z;j;P' j{ 3E 1/L'1g^  
dj#(:jQ#(:d#(-Q[ WQU""QG.=T\_a%;Q4Q\$D9C3D8k=yxkd"1jQC' -W[ 4F]TL<g?Qgr  
de~}aH#e'}]P^dM^IHQ( 'C^W9e]4KQP9!Fde4UtdM ] dNQ(y\_J#L ]r](% 4r]\$  
YKxMTdMF-W#Fj#KkVU#ryU#bk<QUtq#W#5Q9k385WU1x<g'~3Wk]r]#K `C](4k?%'~  
dP'JQ( ]8F:]QE 3Q(y3QAK=C]KJQM~a@dHWU]W#asT!ITIi9#G=JNQk 9g(4k?V  
QP]J#e't'de'QJ#t#=[#([]#Qi<t]CQ#FdQC0eMt%"Y#QQQAwd42MDme]Wk ]e]](=r  
e'qQ#~d.QF-VU#(' ]W[:##Q\_ :4/3#FJ#Q(:5"qax=?9Q#QQ#9A?M#ms9#{<(3)][]\$r  
=W#F'=]e' =#QK'0]Q[kkH#[%]k]P3]W#PSgS1WQQAa-VYMQ#kQ\$]9#c]WL.LI;L<]  
Md#e'dVd[+ ]Q#r%]]#ts=]WQ\_]QU#WD#Ear]UQ#Q#QmXU!Y#?#Az3A{98kXl(k2=  
j##~=V}#[ 1]QQ( ']]#gU 9#[4#e]WQE]WK=I9eYY99##bxi]N?WQz9bZQL]}\*{x=  
Q#P\d=dQ(1I]Q#[=d]]#b=d]QE]#DW#M5WQFS<?N11;aQQMQQAxo?HA/NL]G<V41`  
#eF# jWM 'jWQb-:'HQQ[L]#k?#QQQE]DQEe?t:qd###Q###Q###\$s?HQ7#rMrCVT\*  
#E' y### #d3##D ^<]W###r9#Q(3###(UQe38P3]J###Q@Y!MQ###QgdHb3G3b]}31(  
#E=d]QQEQ .]###QL=V 3###A.###\$z9Q#5Q#t]L'6dHMMVPHI)WOTYH8{!YH4(9zVVK  
MF=^]Q#[ '=d]DQ#tM ^'H##<?QQQg9Q]##r4QF?(dUTh;aGqm;QilYV)sVsTqgaark  
QT3#4##b=:='####a\_=?Q#b Y###x?3Q#L4#f=\$.~Ujd##MVY!uqQQAqgqQUWQQMn\_  
Q{= 4##QidU8]#Q#QQA k9#Q\$g"9QQQb9Qk]8Li)khjQe9\$wawd##Q###HYN#####8C\_  
#e(r3#Q#r'r^'9##Q###k%?NQ###AVHQHYI9Qg9AQ<Ik?5dU#QQHYNQ#M91\*109?Y??~1k  
#ce\*]Q##Qa\_ = <9##Q#Qa\_?9QQQUUUVmU%?A/#FN9tM"YHMYT???';smd{X%93%TT\$,  
#K1V?H##QQ\$R0QQ?#####Sa\_??M@YSUY^' JF#R4(D=r.,aaqWQAmdDV31dx3N3<IQ3k

# Elementos Musicais

## Analyzing Harmonic Progressions with Harmln: the Music of Antônio Carlos Jobim

Giordano Cabral, Robert Willey (2007)

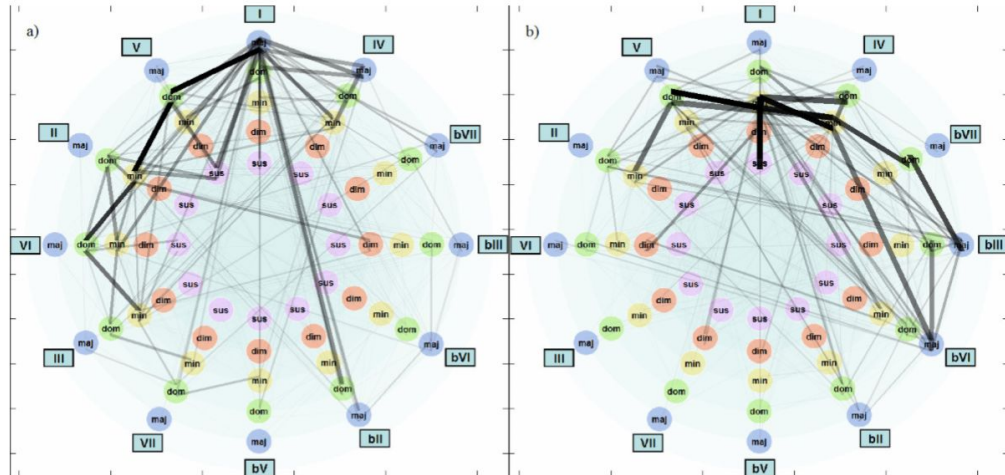


Figure 8. Chord transitions in all songs in major keys (a) and in minor keys (b).

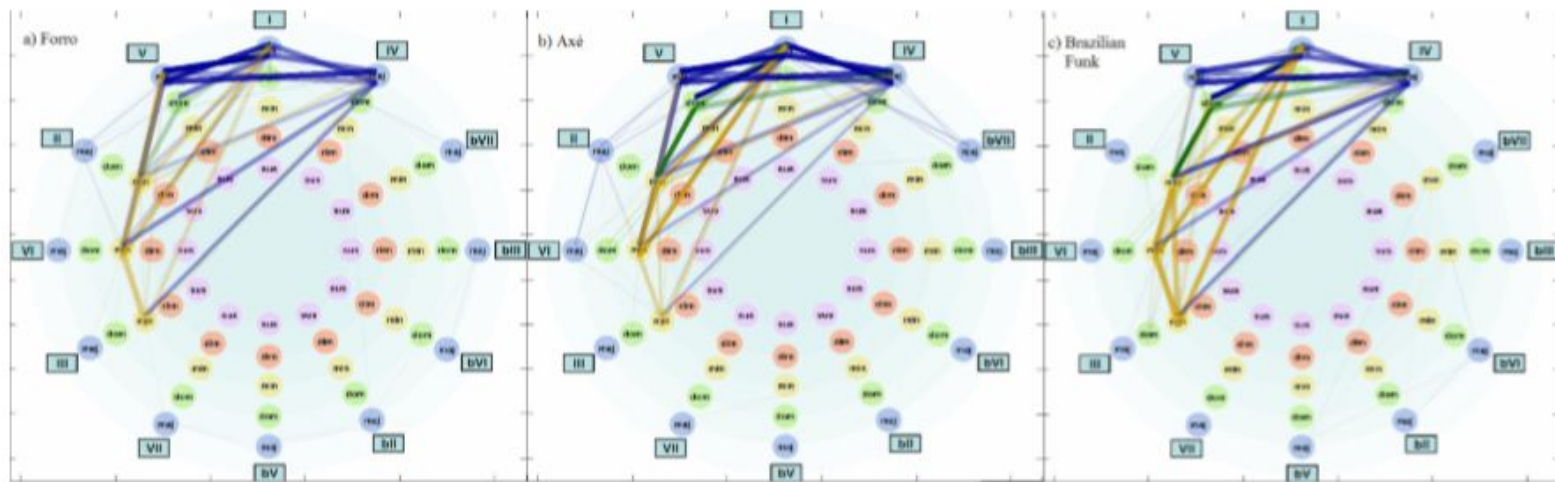


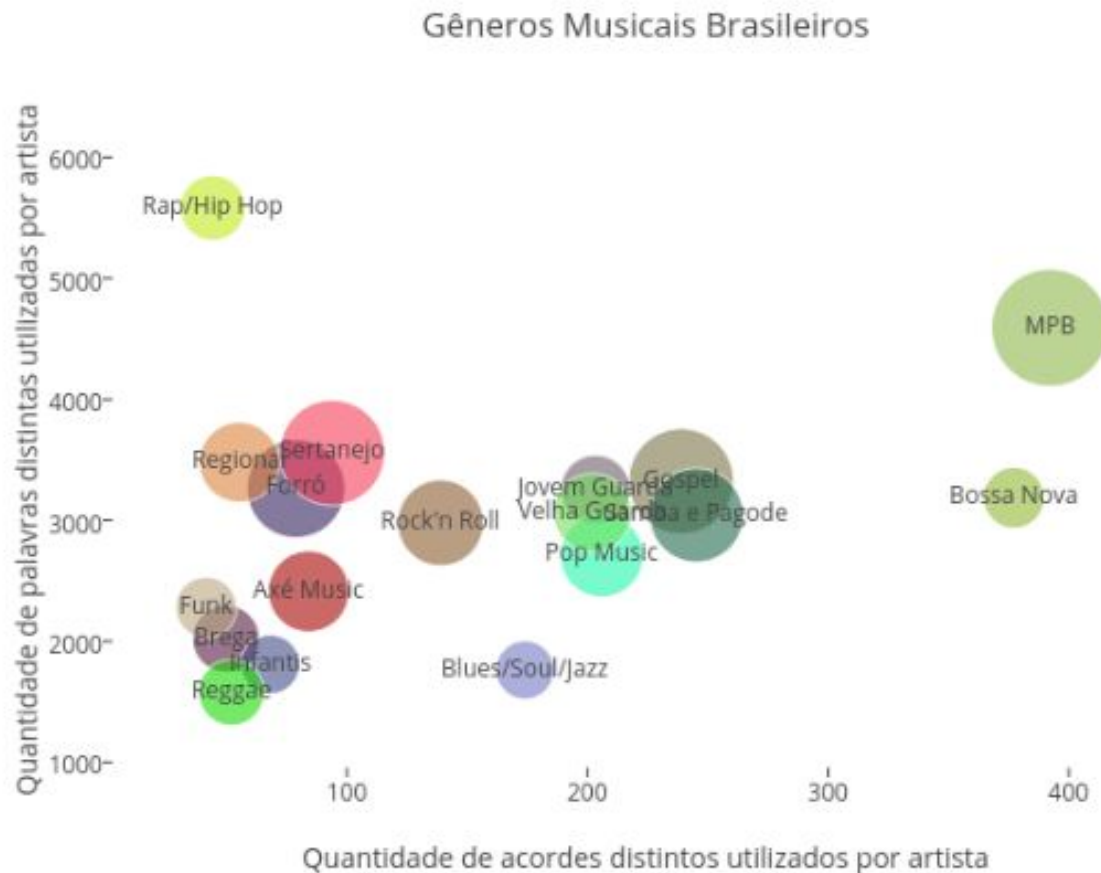
Figure 14. Chord transition graphs for Forró, Axé, Brazilian Funk genres.

# Metadados

## Análise de música brasileira

**44.000** Cifras- [Cifras.com.br](http://Cifras.com.br)

**102.000** Letras- [Letras.com.br](http://Letras.com.br)



# Motivação:

DADOS DA MÚSICA BRASILEIRA

**RITMO**

**OBRIGADA**

<https://www.youtube.com/watch?v=Mis8OXPEkJ4>

<https://www.youtube.com/watch?v=fscbi4-vas8>

<https://www.youtube.com/watch?v=kEvc6fh0oSE>

<http://turbulence.org/Works/song/gallery/gallery.html>