Overview

This paper attempted to investigate the structure of the social network of the Austin Improv Collective (AIC). This group of performers is organized around the following mission statement:

The mission of the Austin Improv Collective is to promote improvisational theatre in Central Texas and develop sustainable performance, practice, management, and teaching skills for Austin's improvisational theatre community. We believe that improvisation is a vital and viable art form which provides unique and invaluable benefits to the individual and the community and we strive to raise awareness of improvisational theatre through performance, teaching, and community outreach.

While there are many ways to analyze this social group, the author chose to define the structure based on troupes and Maestro. In general, actors within this community perform regularly in troupes or special performance groups and are often in more than one group. Additionally, the regular standing Maestro show is an avenue for actors to perform who are not in troupes or whose troupes do not perform on a regular basis. The author chose not to use questionnaires, investigate online communities such as MySpace or Facebook, or known friendships. The author assumed that if an actor is in one troupe then that actor has a connection to the rest of the troupe. Therefore, an actor who is in several troupes will have several connections and play a more critical role in the social network. Additionally, all the actors who performed in Maestro from the beginning of August through November 3rd were treated as a single troupe. Using these assumptions, the social network composed of 68 troupes and 173 performers during the time period previously stated. The list of troupes and performers can be found in Appendix A.

Network Structure

An important aspect of social network analysis is the ability to diagram the social structure of the Austin Improv Collective. Each improviser was treated as a node and was tied to another node based on their common participation on the same troupe. For the rest of this paper, it is assumed if an improviser is in a particular troupe then that particular improviser will have a friendship tie. So, the following social network diagram provides a quick look on how the organization is structured. The Austin Improv Collective during the fall of 2007 has a structure of a "goldfish". It is easily apparent to the casual observer that there is a central group but certain nodes have greater social capital than others and are key links in connecting the collective into a unified community. This diagram can be found in Appendix B. Additionally, it is useful to know if the network structure has a central structure. Within the AIC, there is a strong central structure (with a density of 0.089). It was determined there were 22 core groups that were critical in the formation of the rest of the analysis. This list can be found in Appendix C.

Analysis

A focus of social network research is to investigate the absence of ties between individuals define both the structure of the network and the opportunity to build social capital. A definition of social capital is the benefits that accrue to the collective as a result of the maintenance of positive relations between different individuals, groups, organizational units, or hierarchical levels. Therefore, it is of great interest to find the nodes that act as liaisons between two otherwise disconnected nodes.

Degree Centrality

One might perhaps think that the key influencers of a social network are the individuals that are the most popular. In this research, popularity was defined by the number of direct connections to other individuals. Therefore, this measure was used to identify the performers who were in the most number of troupes and having the greatest number of connections to the AIC. Using the data set presented in Appendix A and Ucinet, the author was able to identify the top 15 performers using this metric. They are presented in the following table identified by the performer and their number of direct ties.

KaceySamiee	153	
AndyCrouch	125	
JasonVines	121	
MikeKinald	120	
KareemBadr	119	
WesBain	114	
MattPollock	111	
KaciBeeler	111	
RoyJanik	109	
SaraFarr	104	
SeanHill	102	
TomBooker	98	
BryanRoberts	86	
ChrisAllen	84	
JeremyLamb	80	
Table 1: Top 15 improvisers using Degree Centrality		

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The average improviser in the network had approximately 31 direct connections with a standard deviation of 31 ties.

Betweenness Centrality

Another important metric used to investigate social structures is the betweenness centrality measure. This measure not only reflects the direct ties but also the extent to which a node is connected to other nodes that are not directly connected to each other and act as an intermediary, liaisons, or bridge within the network. Therefore, these individuals may be able to act as brokers and have an intermediate position on the shortest path connecting the AIC community. Using the data set presented in Appendix A and Ucinet, the author was able to identify the top 15 performers using this metric.

BryanRoberts	18.142
AndyCrouch	7.689
CodyDearing	7.591
MikeFerstenfel	7.468
StephanieCook	7.095
JeremyLamb	6.410
ValerieWard	6.168
SeanHill	5.227
JohnRatliff	5.024
JasonVines	4.991
KareemBadr	3.884
AndreaYoung	2.950
KaciBeeler	2.946
KaceySamiee	2.933
BryanCruz	2.771
Table 2: Top 15 improvisers using Betweenness Centrality	

They are presented in the following table identified by the performer and their normalized betweenness statistic.

The average improviser in the network had approximately a normalized statistic of 0.768 with a standard deviation of 2.059.

Eigenvector Centrality

However, a node's importance in a social structure may not necessarily be reflected by their number of direct ties but rather their direct and indirect ties to popular nodes. Therefore, eigenvector centrality measures the relative importance of the node in a network. It uses relative scores to all nodes in the network and is based on the principle that connections to nodes having a high score contribute more to the score of the node in question. Using the data set presented in Appendix A and Ucinet, the author was able to identify the top 15 performers using this metric. They are presented in the following table identified by the performer and their normalized eigenvector statistic.

KaceySamiee	38.914
RoyJanik	35.729
KaciBeeler	33.541
KareemBadr	33.377
JasonVines	33.133
MikeKinald	32.249
AndyCrouch	31.968
WesBain	31.701
MattPollock	28.43
SaraFarr	28.338
TomBooker	24.092
SeanHill	22.671
ChrisAllen	21.63
TroyMiller	20.486
MarcMajcher	19.939

 Table 3:
 Top 15 improvisers using Eigenvector Centrality

The average improviser in the network had approximately a normalized statistic of 6.149 with a standard deviation of 9.053.

Closeness Centrality

The last metric used to identify the key improvisers in the AIC social network is the closeness centrality measure. This metric defines the degree in which a node is near (directly or indirectly) to all other nodes in the network. This reflects the node's ability to say "I heard it through the grapevine" and their ability to reach everyone within the AIC network. Using the data set presented in Appendix A and Ucinet, the author was able to identify the top 15 performers using this metric. They are presented in the following table identified by the performer and their normalized Closeness statistic.

JasonVines	61.481	
AndyCrouch	61.481	
KareemBadr	61.029	
BryanRoberts	60.806	
SeanHill	60.584	
JeremyLamb	60.364	
KaciBeeler	59.928	
AndreaYoung	59.712	
KaceySamiee	59.498	
WesBain	58.865	
MikeFerstenfel	58.865	
RoyJanik	58.042	
EricHeiberg	57.840	
SaraFarr	57.639	
CodyDearing	57.439	
Table 4: Top 15 improvisers using Closeness Centrality		

The average improviser in the network had approximately a normalized statistic of 45.579 with a standard deviation of 8.202.

Transmission Rate

Nearly all of the improvisers regularly post to a forum that is dedicated to the AIC. The forum is used to inform people within the community about special projects, casting calls (such as for the weekly Maestro show), and parties. The different centrality metrics yielded a list of 25 improvisers who are listed in Table 5 with their overall number of postings.

KaceySamiee	379
AndyCrouch	1559
JasonVines	1257
MikeKinald	440
KareemBadr	2242
WesBain	2185
MattPollock	307

KaciBeeler	1088	
RoyJanik	1704	
SaraFarr	1380	
SeanHill	54	
TomBooker	38	
BryanRoberts	164	
ChrisAllen	1091	
JeremyLamb	1724	
CodyDearing	1336	
MikeFerstenfel	114	
StephanieCook	Unsure based on username	
ValerieWard	675	
JohnRatliff	1046	
AndreaYoung	748	
BryanCruz	Unsure based on username	
TroyMiller	143	
MarcMajcher	570	
EricHeiberg	63	
Table 5: The Top Improvisers based on the 4 Centrality Metrics		

However, the top 15 improvisers who post the most actively on the AIC forum but did not make the top 15 list on any of the centrality metrics happened to be: Shannon McCormick, Julie Lucas, Justin York, Chris Trew, and Mo Daviau.

Conclusions

The Austin Improv Collective is a very dynamic social network. It does have a strong central core with several key active performers who link together this volunteer based social structure. The traditional analysis used in social network theory can be applied to the AIC. It was shown that the AIC has a strong central structure. Additionally, the centrality metrics yield consistent results and identify a core group of 25 individuals who are influential within the network. However, these metrics seem to miss certain key individuals who have a strong influence in the network. For example, Shannon McCormick is on of the producers for the annual Out Of Bounds Improv Comedy Festival. Mo and Chris both had key volunteer roles in this festival. Additionally, Justin York and Chris Trew are key members of ColdTowne. This troupe runs another venue for improv comedy. Additionally, this analysis fails to illustrate the key roles that the instructors/coaches have on the community.

I recommend that any future studies on this network include known social ties through venue/show management, festival preparations, friendship links through online communities such as Facebook and MySpace, as well as a questionnaire to determine the strength of the ties between individuals.

Appendix A: The Troupes and Improvisers

The information is listed by troupe and then lists the improvisers who are in the troupe. The following data format was used because of its ease of importing into Ucinet. The software package used to run the statistical network analysis.

GirlsGirlsGirls ShanaMerlin GirlsGirlsGirls MadelineMalka GirlsGirlsGirls JohnRatliff GirlsGirlsGirls ShellyMiller GirlsGirlsGirls JenCargill GirlsGirlsGirls KaceySamiee GirlsGirlsGirls MoDaviau GirlsGirlsGirls JulieLucas GirlsGirlsGirls AndreaYoung McNicholandMay BobMcNichol McNicholandMay ErikaMay TheFrankMills BobMcNichol TheFrankMills ErikaMay TheFrankMills RachelMadorsky TheFrankMills DaveBuckman ImprovforEvil NadineLatief ImprovforEvil MikeKinald ImprovforEvil MarcMajcher ImprovforEvil MattPollock ImprovforEvil BobApthorpe ImprovforEvil JasonVines ImprovforEvil EricHeiberg StarTreking TroyMiller StarTreking JayMichael StarTreking DavidLampe StarTreking KaceySamiee StarTreking AndyCrouch StarTreking SeanHill StarTreking ShanaMerlin StarTreking RoyJanik StarTreking KareemBadr StarTreking KaciBeeler StarTreking ChrisAllen StarTreking WesBain StarTreking ChristinadeRoos StarTreking SaraFarr StarTreking JasonVines StarTreking JustinDavis StarTreking CodyDearing PoliteSociety AndyCrouch PoliteSociety MichaelFerstenfeld PoliteSociety KendleWade PoliteSociety SeanOBrien PoliteSociety KanYan PoliteSociety CaitlinSweet LookCookie LeahMoss

LookCookie KerriLendo LookCookie CodyDearing LookCookie JerryBilbo LookCookie EricSeufert LookCookie BradleyJackson LookCookie MichaelWilliams LookCookie BryanRoberts LookCookie RyanHarrison Parrallogramophonograph KareemBadr Parrallogramophonograph KaciBeeler Parrallogramophonograph RoyJanik Parrallogramophonograph ValerieWard HooversBlanket ChrisAllen HooversBlanket ErinMolson HooversBlanket AlexNixon HooversBlanket BryanRoberts HooversBlanket AndyPereira HooversBlanket JasonVines HooversBlanket RoyJanik HooversBlanket KaciBeeler HooversBlanket WesBain HooversBlanket KareemBadr HooversBlanket SaraFarr LeadingBrands FrankWillmore LeadingBrands GeneJoe LeadingBrands AmyMcKenna LeadingBrands MikeMcGill LeadingBrands SaraFarr LeadingBrands JamesRoberts LeadingBrands EricHeiberg AvailableCupholders JeremyLamb AvailableCupholders BillStern AvailableCupholders JonBenner AvailableCupholders MichaelJoplin AvailableCupholders AceManning ColdTowne MikeJastroch ColdTowne TamiNelson ColdTowne ArthurSimone ColdTowne ChrisTrew ColdTowne JustinYork ColdTowne ArthurSimone GetUp ShannonMcCormick GetUp ShanaMerlin GetUp SaraFarr Junk AndreaYoung Junk TedRutherford Junk TroyMiller Junk AndyCrouch Junk SeanHill Starterkit AdenKirschner Starterkit AnnWilson Starterkit BradTemple Starterkit EricGarcia Starterkit JustinDavis Starterkit ZachPalmer MidnightSociety LanceGilstrap

MidnightSociety NickRameriz MidnightSociety AndyPetruzzo MidnightSociety AndrewLee MidnightSociety StevenShort MidnightSociety ElizabethLeader MidnightSociety StephanieCook MidnightSociety JerichoThorpe MidnightSociety JoelKeith Gigglepants ThaiLe Gigglepants BryanCruz Gigglepants DavidToscano Gigglepants MichaelChampion Gigglepants MichaelBird Gigglepants MichealDomangue Gigglepants AlexBiasci Gigglepants AlexNavissi Gigglepants WesReynolds Gigglepants BryanRoberts Gigglepants SarahEshelman Gigglepants JaminaKouhane Gigglepants SandraCuya Gigglepants MeghanWolff Gigglepants JavierSanchez Gigglepants RainerSigwald Gigglepants MonigueMalanado OneAM TamiNelson OneAM ChrisTrew VertigoRamp TedRutherford VertigoRamp CraigKotfas TheKnuckelballNow MikeDAlonzo TheKnuckelballNow CraigKotfas TheKnuckelballNow MichaelJoplin TheKnuckelballNow DaveModigliani 1813Drake AndyCrouch 1813Drake AsafRonen SuspiciousPackage MattPollock SuspiciousPackage JasonVines PerfectSeason KaciBeeler PerfectSeason RoyJanik Firth&Arjet KristinFirth Firth&Arjet JessicaArjet \$10Bourbon TerrilFisher \$10Bourbon AlexNixon \$10Bourbon AndyPereira ISnoodBear WesBain ISnoodBear ChristinadeRoos FlyingTheaterMachinesWangDangDoodleHour JessicaArjet FlyingTheaterMachinesWangDangDoodleHour SeanHill FlyingTheaterMachinesWangDangDoodleHour SaraFarr FlyingTheaterMachinesWangDangDoodleHour MattPollock FlyingTheaterMachinesWangDangDoodleHour MarcMajcher FlyingTheaterMachinesWangDangDoodleHour RobertArjet FlyingTheaterMachinesWangDangDoodleHour JasonVines TheDarkBloodlords RoyJanik TheDarkBloodlords KaciBeeler TheDarkBloodlords MikeJastroch

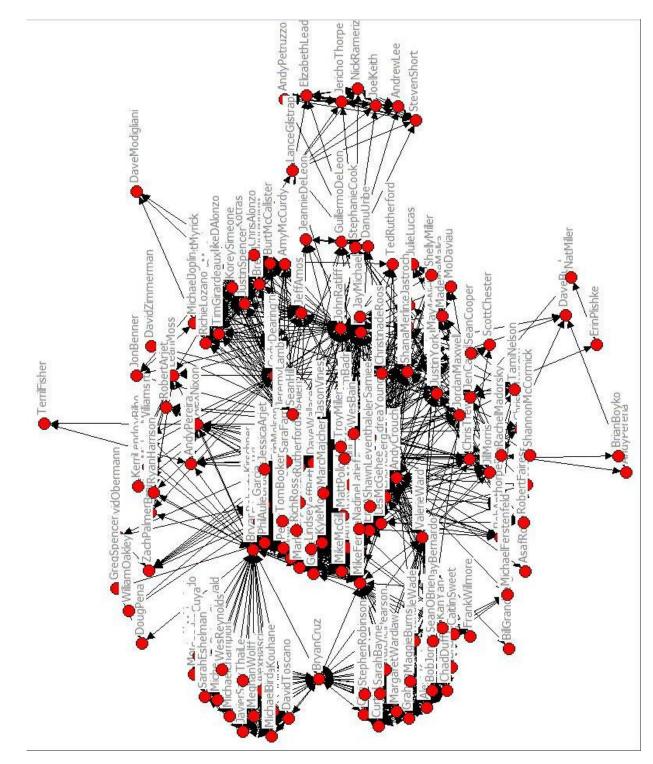
TheDarkBloodlords MikeKinald TheDarkBloodlords AndyCrouch TheDarkBloodlords JasonVines FrogtownHollowJubileeJugband WesBain FrogtownHollowJubileeJugband JordanMaxwell FrogtownHollowJubileeJugband ChrisTrew FrogtownHollowJubileeJugband KaciBeeler FrogtownHollowJubileeJugband EricHeiberg FrogtownHollowJubileeJugband JasonVines LetsRock CodyDearing LetsRock DavidZimmerman LetsRock JasonVines TheSmokingArm MikeJastroch TheSmokingArm JustinYork TheSmokingArm BobMcNichol TheSmokingArm ErikaMay TheSmokingArm StephanieCook TheSmokingArm KareemBadr TheSmokingArm CodyDearing TheSmokingArm JohnRatliff TheSmokingArm JasonVines VinylDestination ValerieWard VinylDestination ChristinadeRoos VinylDestination KristinFirth VinylDestination CodyDearing VinylDestination JohnRatliff VinylDestination BillStern VinylDestination JasonVines YouMeandGreg GregSpencer YouMeandGreg PhilAulie YouMeandGreg DougPena Spawndoodalie JenCargill Spawndoodalie ErinPlishke Spawndoodalie NatMiller HeroesofComedy AndyCrouch HeroesofComedy DavidLampe HeroesofComedy ChrisOrf HeroesofComedy KareemBadr HeroesofComedy KaceySamiee HeroesofComedy ChristinadeRoos HeroesofComedy DaveWallace HeroesofComedy SeanHill ConspiracyButter BrianBoyko ConspiracyButter ChrisTrew WhirledNewsTonight ScottChester WhirledNewsTonight KareemBadr WhirledNewsTonight WesBain WhirledNewsTonight KaciBeeler WhirledNewsTonight KaceySamiee WhirledNewsTonight ChrisTrew WhirledNewsTonight RoyJanik mrhappychocolatesunshine CodyDearing mrhappychocolatesunshine AndreaYoung ASipofChantico KristinFirth ASipofChantico BillGrandberg CockSound AndreaYoung CockSound ChristinadeRoos

CockSound ValerieWard YoureFat RachelMadorsky YoureFat JillMorris PerfectSeason RoyJanik PerfectSeason KaciBeeler Threefield WesBain Threefield KareemBadr Threefield RoyJanik Kazillionaire MadelineMalka Kazillionaire JeremyLamb BridgeportWomensCorrectionalFacilityImpromptuSkitPlayers JillMorris BridgeportWomensCorrectionalFacilityImpromptuSkitPlayers ErikaMay BridgeportWomensCorrectionalFacilityImpromptuSkitPlayers JenCargill BridgeportWomensCorrectionalFacilityImpromptuSkitPlayers RachelMadorsky BridgeportWomensCorrectionalFacilityImpromptuSkitPlayers KaciBeeler BridgeportWomensCorrectionalFacilityImpromptuSkitPlayers TamiNelson BridgeportWomensCorrectionalFacilityImpromptuSkitPlayers MadelineMalka TheGreatMundane ChristinadeRoos TheGreatMundane JordanMaxwell TheGreatMundane KaceySamiee TheGreatMundane JayBernardo TheGreatMundane JeffAmos CopsandLawyers WesBain CopsandLawyers KareemBadr CopsandLawyers ChristinadeRoos CopsandLawyers KaceySamiee CopsandLawyers TroyMiller CopsandLawyers DavidLampe CopsandLawyers SeanCooper CopsandLawyers JayMichael CopsandLawyers ChrisOrf CopsandLawyers ShanaMerlin CopsandLawyers AndyCrouch SignifyingNothing ValerieWard SignifyingNothing WesBain SuiGeneris DaveWallace SuiGeneris RoyJanik SuiGeneris KareemBadr SuiGeneris WesBain TheNewlybedGame JeremyLamb TheNewlybedGame ChrisAllen TheNewlybedGame DanuUribe TheNewlybedGame ChristinadeRoos TheNewlybedGame WesBain TheNewlybedGame GuillermoDeLeon TheNewlybedGame JeannieDeLeon fartclownglasses MikeJastroch fartclownglasses JillMorris fartclownglasses ChrisTrew fartclownglasses AndreaYoung RoyRoyRoy RachelMadorsky RoyRoyRoy JillMorris RoyRoyRoy ArthurSimone RoyRoyRoy AndyCrouch RoyRoyRoy ChrisTrew RoyRoyRoy EricHeiberg RoyRoyRoy ValerieWard

RoyRoyRoy JustinYork RoyRoyRoy AndreaYoung IAmATruck ValerieWard IAmATruck AndyCrouch IAmATruck BobMcNichol IAmATruck JenCargill IAmATruck ErikaMay BlueBalls AndyPereria BlueBalls DaveBuckman BlueBalls RachelMadorsky HarryPotter RoyJanik HarryPotter KaciBeeler HarryPotter AndyCrouch HarryPotter MikeKinald HarryPotter MarcMajcher HarryPotter JasonVines HarryPotter SaraFarr RoaldDahl ShanaMerlin RoaldDahl AndyCrouch RoaldDahl MikeKinald RoaldDahl MarcMajcher RoaldDahl ErinMolson RoaldDahl SaraFarr PlaysWellShakespeare LesMcGehee PlaysWellShakespeare AndyCrouch PlaysWellShakespeare ShanaMerlin PlaysWellShakespeare JodieEgerton PlaysWellShakespeare RobertFaires NoLeft JohnRatliff NoLeft BillStern Punch LanceGilstrap Punch LeahMoss Punch JohnRatliff PuppetGun KareemBadr PuppetGun EricHeiberg PuppetGun RoyJanik PuppetGun JohnRatliff PuppetGun KaceySamiee TheLateNightLunchShow AdenKirschner TheLateNightLunchShow EricGarcia TheLateNightLunchShow WilliamOakley HankandTony JerryBilbo HankandTony EricSeufert TheExtraordinaryLeague AdenKirschner TheExtraordinaryLeague DavidObermann TheExtraordinaryLeague SaraFarr TheExtraordinaryLeague ZachPalmer CostaCider ChrisAllen CostaCider JeffBritt CostaCider BryanRoberts Interrobang WesBain Interrobang ChristinadeRoos Interrobang ChristieIngram Interrobang ShawnLeventhal Interrobang ErikAdams OneNightBand CraigKotfas OneNightBand JeremyLamb

OneNightBand MikeDAlonzo OneNightBand BillStern OneNightBand JeffAmos OneNightBand ChrisAlonzo OneNightBand BurtMcCallister OneNightBand RichieLozano OneNightBand MargaretMyrick OneNightBand TimGirardeaux OneNightBand JohnRatliff OneNightBand MichaelJoplin OneNightBand JustinSpencer OneNightBand BrendanBigalow OneNightBand SeanHill OneNightBand AmyMcCurdy OneNightBand MichaelBrockman OneNightBand AceManning OneNightBand KoreySimeone OneNightBand CodyDearing Ed32 CurtisLuciani Ed32 StephenRobinson Ed32 BobJones Ed32 CaitlinSweet Ed32 ChadDuffy Ed32 ChrisKelley Ed32 JayBernardo Ed32 MargaretWardlaw Ed32 MaggieBurns Ed32 ValerieWard Ed32 SeanOBrien Ed32 RachelPearson Ed32 AlexisKanter Ed32 MikeFerstenfel Ed32 GrahamSchmidt Ed32 BrianPargac Ed32 SarahBayne Ed32 KanYan Ed32 KendleWade Ed32 BryanCruz Maestro LesMcGehee Maestro MattPollock Maestro TomBooker Maestro AnnWilson Maestro MikeKinald Maestro GeneJoe Maestro EricGarcia Maestro ErikAdams Maestro MikeFerstenfel Maestro AndreaYoung Maestro EricHeiberg Maestro ErinMolson Maestro BryanRoberts Maestro MattPollock Maestro SaraFarr Maestro AmyMcKenna Maestro TomBooker Maestro WesBain Maestro BradTemple

Maestro PeterRogers Maestro JeffBritt Maestro JustinDavis Maestro NadineLatief Maestro ChrisAllen Maestro KaceySamiee Maestro RichRoss Maestro AndyCrouch Maestro RoyJanik Maestro KaciBeeler Maestro KristinFirth Maestro MikeKinald Maestro AdenKirschner Maestro PhilAulie Maestro AlbertJin Maestro BeckBennett Maestro KyleMooney Maestro NickRutherford Maestro JeremyLamb Maestro SeanHill Maestro KaceySamiee Maestro DaveWallace Maestro TroyMiller Maestro MarkCarpenter Maestro JasonVines Maestro KareemBadr Maestro MarcMajcher Maestro JessicaArjet Maestro MikeMcGill Maestro ShawnLeventhal Maestro JamesRoberts Maestro Lindsey



Appendix B: The AIC social network diagram

Appendix C: The List of the Core Groups in the AIC

Using the 2-Mode Categorical Core/Periphery Model option in Ucinet, it was determined that the AIC has a central core of groups in which their connections link across the entire AIC social network. These groups are as follows:

- 1) Midnight Society
- 2) Girls, Girls, Girls
- 3) Hank and Tony
- 4) Available Cupholders
- 5) Heroes of Comedy
- 6) Hoovers Blanket
- 7) Frogtown Hollow Jubilee Jugband
- 8) ColdTowne
- 9) Improv for Evil
- 10) Cops and Lawyers
- 11) Leading Brands
- 12) Ed32
- 13) Gigglepants
- 14) The Newlybed Game
- 15) One Night Band
- 16) Starterkit
- 17) Polite Society
- 18) Harry Potter
- 19) Roy Roy Roy
- 20) Maestro
- 21) The Extraordinary League
- 22) Star Treking