

Notes from Hades

Not much to report this time around. Things are busy, but going well around the Hassler household. The wine making continues, and I have bottled four batches so far – three batches of blackberry wine and one batch of blackberry port. I'll let you know in a few months how it turns out.

Last month, I mentioned that I had been contacted by the editor of Flagship magazine. Well, she was kind enough to send me a copy of the magazine, and I have to say that I was impressed. It is very professional looking; glossy pages and some color pages. It covers the gamut of games – computer, online, board, and every combination in between. They are actively looking for reviewers, so if you are at all interested, please contact Carol Mulholland at carol@flagshipmagazine.com. A one or two page review will get you a free copy of this impressive and informative zine.

No games ended this turn, although a couple are getting close. Pavlov is just one or two turns away, and Retriever is potentially one turn away.

The next deadline is **Tuesday, January 3 at 5:00 p.m. Pacific Time.** Please do not call or fax orders after 10:00 p.m. Pacific time. My wife and I tend to retire early. Also, if you want to fax in orders, call first. We hang up on unannounced faxes.

Contents

Howling at the Moon	Letter Column	Page 1
Off the Leash	Machiavelli	Page 2
Dirty Deeds...	Machiavelli	Page 3
Dogfight	Machiavelli	Page 4
Pavlov	Dune	Page 6
Dogged	Silverton	Page 6
Junk Yard Dog	Industrial Waste	Page 6
Laika	Liftoff	Page 7
Retriever	Outpost	Page 9
Dogwood	History of the World	Page 10
Salty Dog	Settlers of Catan	Page 11
Dog Chow	Age of Renaissance	Page 12
Sled Dog	Kremlin Gamestart!	Page 12
Pedagoguery		Page 13

Game Openings

Doberman. Industrial Waste. This game will start after Junk Yard Dog ends. Have Eric Brosius, Dave Partridge, Richard Weiss, and Michael Longdin. This game is closed, but Dave and Eric are willing to defer to anyone who is not in Junk Yard Dog.

Outlaw Dogs. Gunslinger. A game of shootouts in the old West. The exact scenario to be determined. Have Chris Geggus, Paul Bolduc, Dave Partridge, Andy Lewis, and Mike Scott, need up to 2 more.

Jackal. New World. A game of colonization in the Americas. Have Dave Partridge, Andy Lewis, Bob Robles, Andy York, and Brendan Whyte, will take up to 1 more.

Sled Dog. Kremlin. Have Chris Geggus, Bill Scharf, Dennis Cain, Bob Robles, Mike Scott, and Michael Longdin. **Starts this issue!**

Sirius. Merchant of Venus. We will use the Fast Setup, Lost ? Box, Own Species Bonus, Customized Spaceships, and the Agents, Bases, and Second Ships optional rules. Victory will be \$4000. Have Chris Geggus, Dave Partridge, Andy Lewis, Dennis Cain, Bob Robles, and Paul Bolduc. This game is closed.

Terrier. Silverton. We will play the advanced game with the Hiring and Advancement optional rule. Have Dave Partridge, Bill Scharf, Andy Lewis, and Paul Bolduc, will take up to 2 more.

Hound. Outpost. Dave Partridge, Bill Scharf, Kevin Wilson, Andy Lewis, Michael Lowrey, Andy York, and Eric Brosius, will take up to 3 more.

Flea Collar. Kremlin. This game will start when Sled Dog ends. Have Bob Robles, Brendan Whyte, Pasquale Giovine, and Chris Geggus, need up to 2 more.

Wish List

Dune. We will use the optional Lansraad, Ixians, and Bene Tleilaxu powers. Have Kevin Wilson, Bob Robles, and Paul Bolduc, will take up to 3 more (4 if one player plays the Bene Tleilaxu).

History of the World. Have Andy Lewis and Kevin Wilson, will take up to 5 more.

Seafarers of Catan. We will be playing the Oceans scenario. Have Mike Scott and Dave Partridge, need up to 4 more.

Machiavelli. Rules determined by player vote as usual. Have Kevin Wilson, Dave Partridge, Bob Robles, and Dale Horsley, will take up to 4 more.

Age of Renaissance. This game will start when Dog Chow finishes. Have Michael Longdin and Bob Robles, need up to 4 more.

In general, game ownership is recommended, but not required.

Note that a subscription to S.O.B. is not required to play in a game run by flier, but that a game fee will be charged to non-subbers.

S.O.B. is a zine of unusual postal games, and anything else I feel like including. Your publisher is:

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Subscriptions cost \$2.00 per issue (\$3.00 overseas).

Howling at the Moon The S.O.B. Letter Column

Chris Geggus

I subscribe to Flagship and it is certainly well written and put together. Please advertise to your readership that if anyone wants a hard copy I will gladly mail one out. The cost is minimal, so no charge. A good magazine to advertise in I would say as it reaches a lot of "pure" computer gamers, rather than just us converted boardgamers.

Bob Robles

One book, "Antigone" by Sophocles. Truly a classic, the powerful but immoral state versus personal responsibility and the will fo the Gods (or something like that). Short too.

Off the Leash

Advanced Game, Plague, Famine, Special Military Units, Conquest, Moneylenders, Gray Press, Ultimate Victory, Gunboat
Miller Number 2001Fpw10

Summer 1466

Deadline for Fall 1466: 1/3 Tuesday

Florence, all but eliminated, plays Santa Clause to France and Venice, while Naples occupies all but his capital. Trench warfare in the north continues.

Expenditures

Florence gives 6 ducats each to France and Venice.

Outstanding Debt

None.

Orders

FLORENCE 🐘: No units

FRANCE 🐘: [A Tyrolea supports A Como to Milan (cut)], A Swiss supports A Tyrolea, [A Como to Milan], A Pavia supports A Modena to Parma, A Fornova supports A Modena to Parma, A Modena to Parma, F Gulf of Lions holds, F Ligurian Sea to Modena, G Milan supports A Como to Milan (DESTROYED)

NAPLES 🐘: A Piombino supports A Sienna to Pisa, A Florence to Pistoia, A Sienna to Pisa, A Patrimony to Perugia, A (EM) Perugia to Arezzo, A Aquila to Spoleto, F Tyrrhenian Sea supports A Piombino, F Western Mediterranean holds, G Ancona converts to A

VENICE 🐘: A Austria supports A Carinthia to Tyrolea, [A Carinthia to Tyrolea], A Trent supports A Milan, A Milan besieges (garrison destroyed), A Cremona supports A Milan, A Parma to Mantua, A Bologna to Lucca, A Ferrara to Bologna, A Verona to Ferrara, A Dalmatia holds, F Upper Adriatic to Lower Adriatic, F Venice to Upper Adriatic, G Durazzo convert to F

Your treasury:

Notes

The Florence/France/Naples/Venice draw fails with 2 abstentions and 1 no vote.
A concession to Venice has been proposed.

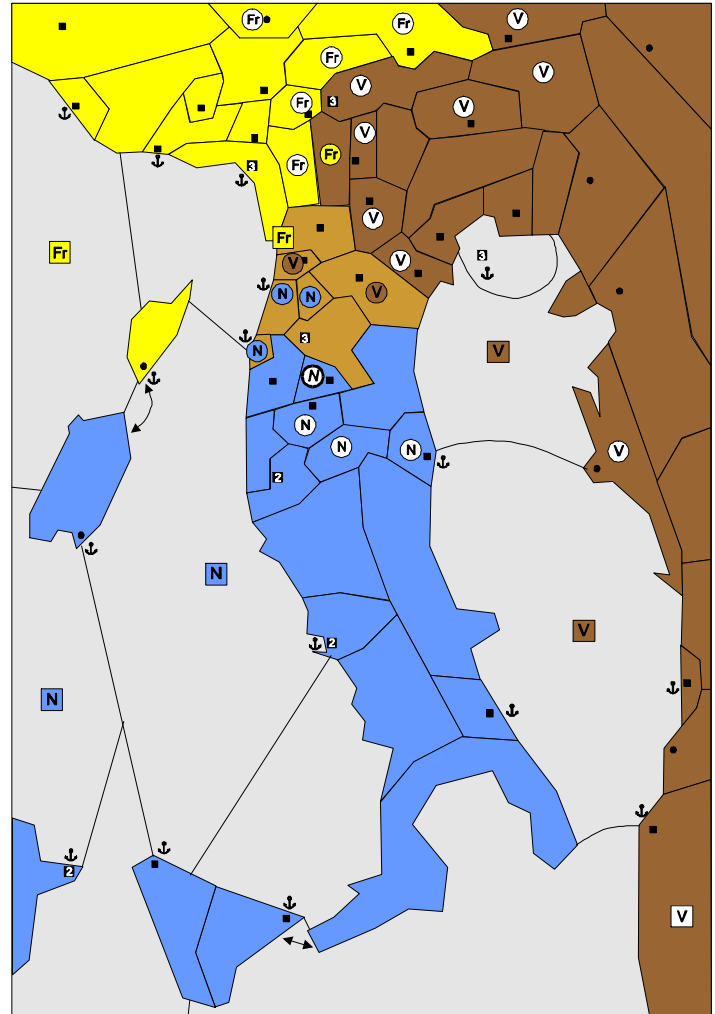
Press

France – Florence and Venice: This is a gunboat game, or it should must be so, but incredible to say, Venice knew to have moneys from Florence to disband my unit before to have them: another miracle as Naples wishes to happen. I shall stay everywhere and propose the winning of Venice: if you two collude the game has no sense to continue.

France – Naples: If Venice takes at least 14 ducats more than you every winter, it is impossible to go to do better than him on the table, unless you make miracles; I cannot do, are you able instead? Any way Florence and Venice collude thus we can give up the game, if you don't intend to combat Venice: I propose the winning of Venice.

Naples – France & Venice: Since Florence has dropped out of the picture, it leaves me with two choices, to attack one of you, or just to take over his

Off the Leash



○ Army □ Fleet ◇ Garrison ◆ Autonomous Garrison ◆ Besieged Garrison
holdings. I will do the latter, unless attacked by one of you...Each of you now hold one of Florence's controlled centers... I plan on taking the rest... just for the record...

Dirty Deeds Done Dirt Cheap

Advanced Game, Plague, Famine, Special Military Units, Conquest, Moneylenders, Strategic Movement, Black Press, Standard Victory

Miller Number 2000Fpw10

Spring 1056

Deadline for Summer 1056 1/3, Tuesday

Pisa turns on his former allies, joining Byzantium and the Muslims in attacking the Pope and Venice.

Builds

		Cost
Byzantines	Maintains all, no new builds	9
Muslims	Maintains A Arezzo, F Sardinia, F Tyrrhenian Sea, F Naples, F Otranto, F Ionian Sea, A Salerno, builds A Palermo	24
Papacy	Maintains A Rome, Sienna, Urbino, Bari, and Aquila, builds Elite Mercenary A Perugia	21
Pisa	Maintains A Turin, A Pavia, A Cremona, F Ligurian Sea, F Piombino, builds A Lucca, A Pisa	21
Venice	Maintains all, builds F Venice, A Padua	24

Outstanding Debt

Summer 1056: 15 ducats due from the Papacy (10 borrowed)

Spring 1057: 5 ducats due from Pisa (3 borrowed)

Orders

BYZANTINES (Robles):	A HERZEGOVINA holds, F (EM) Albania to DURAZZO
MUSLIMS (Wilson):	[A Arezzo to Florence (DISLODGED, retreat garrison, OTB)], A SALERNO supports F Naples, [A PALERMO to Rome], F SARDINIA holds, F TYRRHENIAN SEA transports A Palermo to Rome, F NAPLES supports F Tyrrhenian Sea, F OTRANTO supports F Ionian Sea to Lower Adriatic, F Ionian Sea to LOWER ADRIATIC
PAPACY (Scott):	[A SIENNA to Florence], A (EM) Perugia to AREZZO, A ROME holds, A URBINO supports A Sienna to Florence, A AQUILA supports A Bari, A BARI supports A Aquila
PISA (Roalstad):	A TURIN to MONTFERRAT, A PAVIA supports A Cremona to Milan, A Cremona to MILAN, A PISA supports Muslim A Arezzo to Florence, A Lucca to BOLOGNA, F LIGURIAN SEA supports A Pisa, [F PIOMBINO to Sienna]
VENICE (Partridge):	[A MILAN HOLDS (DISLODGED, RETREAT COMO, CARINTHIA, TRENT, BERGAMO, PARMA, GARRISON, OTB)], A VERONA TO MANTUA, A BOSNIA TO CROATIA, [A FLORENCE TO AREZZO], A PADUA HOLDS, F UPPER ADRIATIC TO DALMATIA, [F LOWER ADRIATIC SUPPORTS PAPAL F DALMATIA TO HERZEGOVINA (NSU, DISLODGED, RETREAT ALBANIA, RAGUSA, ANCONA, OTB)], F VENICE TO UPPER ADRIATIC

Your treasury:

Summer 1056 Plague

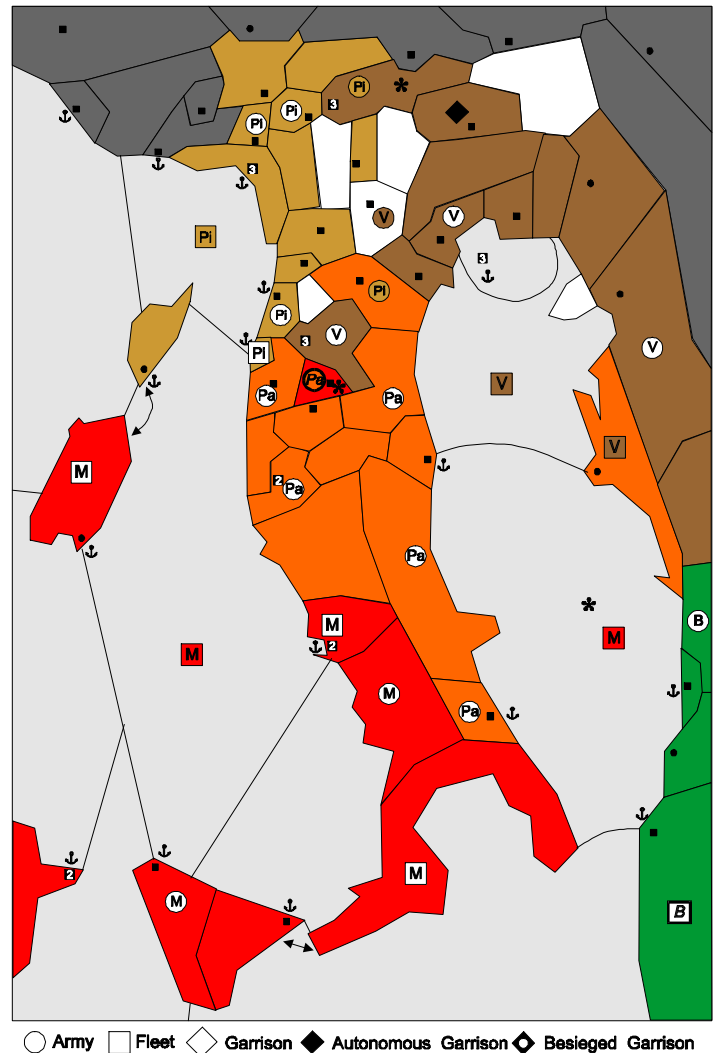
Plague results held until retreats received.

Press

Muslims – Byzantines: Eastern Orthodox vs. Western Demagoguery. How can we lose? You with me?

Muslims – Pisa: The infidel proves he is no true man if he takes his orders for the apostate in the Holy See.

Dirty Deeds Done Dirt Cheap



Muslims – Venice: Are you also a girly-man infidel, taking orders from that man in the funny hat and long dress? I thought so.

Pias – Muslims & Byzantines: The Battle lines are drawn, the sides are even, and its time to start taking back what is ours.

Pisa – Venice & Papacy: Thanks for the help in eliminating the HRE, but I'm afraid our Alliance has come to an end. I must choose to side with the Muslims & Byzantines in this struggle for dominance. It was good working with you all.

Venice: Monday night, last minute orders, haven't heard from anyone all season, haven't written anyone, so much for diplomacy! Will do better next time I hope. Hope I guessed well.

Dogfight

Advanced Rules, Natural Disasters, Special Military Units, Conquest, White Press, Gunboat, Standard Victory

Miller Number 2005Apw10

Spring 1455

Deadline for Summer 1455 1/3, Tuesday

Three major wars are in evidence. The continuing war between France and Milan is mostly quiet, helped in part by the continued disorder in the Duke's household. The Pope goes after a strongly fortified Florence, while Naples launches a strong attack on a Turk who is not well prepared. Venice and Austria are not fighting, but Venice is rattling a saber in Austria's direction.

Fall 1454 Retreats

Austria retreats A Croatia to Carniola

Florence retreats A Arezzo to garrison

Builds

	Cost
Austria: Maintains all, no new builds	9
Florence: Maintains all, builds A (Elite Mercenary) Pisa, G Florence	18
France: Maintains all, builds A Swiss, A Avignon	12
Milan: NBR! Maintains all, no new builds	9
Naples: Maintains A Bari, F Sardinia, F Central Mediterranean, builds F Messina, F Naples, F (Elite Mercenary) Palermo	21
Papacy: Maintains all, builds A Ancona, A Perugia	18
Turks: Maintains all, builds F Durazzo	12
Venice: Maintains all, builds F Venice, A Padua, and A Treviso	21

Orders

- AUSTRIA : A Tyrolea hold, A Trent besieges (garrison destroyed), A Carniola holds
- FLORENCE : [A Florence to Arezzo], A (EM) Pisa to Sienna, G Pisa convert to A, G Arezzo supports A Florence to Arezzo, [A Florence convert to A]
- FRANCE : A Turin to Savoy, [A Pavia supports Austria A Tyrolea to Milan (nso)], A Swiss to Turin, A Avignon to Provence
- MILAN : NMR! A Milan holds, A Parma holds, A Montferrat holds
- NAPLES : A Bari supports F Messina to Otranto, F Messina to Otranto, F (EM) Palermo to Ionian Sea, F Sardinia to Western Mediterranean, F Central Mediterranean supports F Sardinia to Western Mediterranean
- PAPACY : A Bologna supports A Ancona to Urbino, A Arezzo besieges, [A Sienna to Pisa (Dislodged, retreat Piombino, Patrimony, OTB)], A Perugia supports A Arezzo, A Ancona to Urbino, [F Upper Adriatic supports A Ancona to Urbino (cut, Dislodged, retreat Istria, Padua, Ferrara, Ancona, OTB)]
- TURKS : A Ragusa to Herzegovina, F Lower Adriatic supports A Ragusa to Herzegovina, [F Durazzo to Ionian Sea], F Tunis holds
- VENICE : A Padua to Verona, A Treviso to Friuli, A Verona to Mantua, A Cremona holds, F Venice supports F Dalmatia to Upper Adriatic, F Dalmatia to Upper Adriatic, F Croatia supports F Dalmatia to Upper Adriatic

Your treasury:

Notes

A standby player has taken over for Milan. It is you (if checked):

Summer 1455 Plague

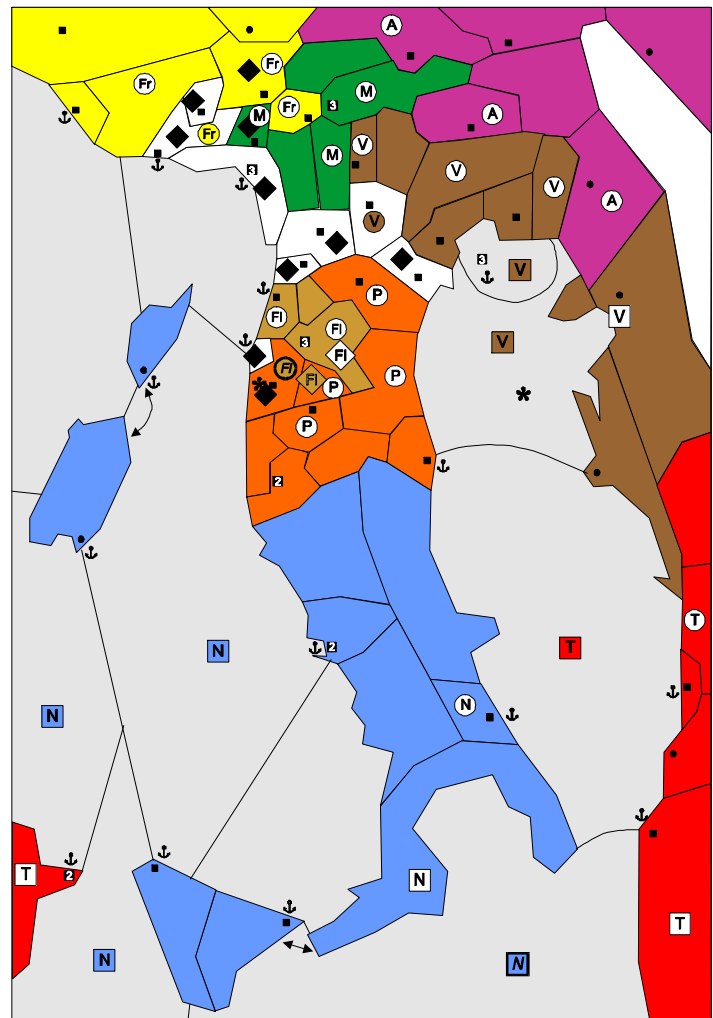
Good Year – No Plague!

Press

Austria – Milan: Beautiful view I have here from Trent. I'm good.

Austria – Venice: I get it, I get it...

Dogfight



○ Army □ Fleet ◇ Garrison ◆ Autonomous Garrison ◆ Besieged Garrison

Florence – Gods: May plague hit the Pope but be gentle to your faithful Florentine deciples.

Florence – Pope: I hope everyone noted how you blatantly lied in the press. You have revealed that your word means nothing.

Florence – Venice: Still hoping you can help me out.

France – Austria: Your chance to join in the plunder of Milan may have to wait because the Venetians has joined the plundering, and the late Duke's younger Brother has rallied the Armies. If only you had moved last season, we would have been in better position to deal with Venice. I will continue to support your Army in Tyrolea into Milan as long as I can. Do not show mercy on Milan, his Country is in ruins, and we must act to solidify our borders against Venice.

France – Milan: I'm sorry you have to take over a doomed Country which your late Brother lead into ruin, but I can not stop the Tide of War. I will promise to rule your Provinces with a gentle hand.

France – Naples: I will agree to your terms so long as your Fleets do not enter the Ligurian Sea or the Gulf of Lions.

France – Venice: An opportunist. The late Duke wasn't even buried before you attack. Can two aggressors coincide?

Papacy – Florence: I am extracting penance for your earlier transgression.

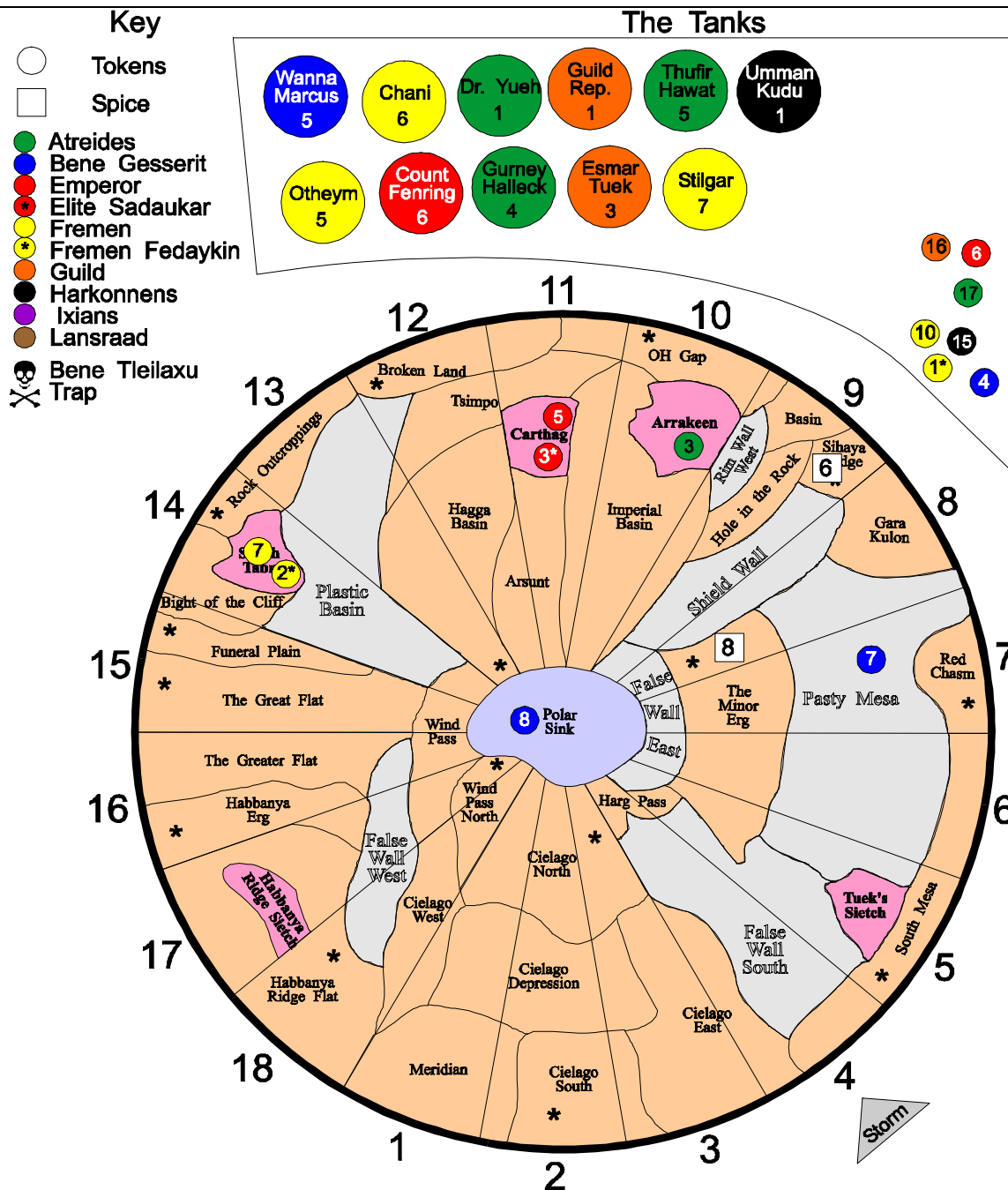
Turks – Naples: You know, I'm trying very hard to work with you here, but you aren't making it easy! Hovering next to my center so I have to waste the unit and just leave it parked there is not a good plan. I have no ill intentions towards you, but you need to let me concentrate elsewhere.

Venice – Austria: Where you retreat to tells if you friend or foe, we see with this report.

Venice – France: I backdoor Milan, you front. Don't help Austria too much, please. Keep Austria in fight with you against Milan, ok?

Venice – Papacy: I know you fleet like to sail at sea, but not good here in UA, move to land, or to LA and have fun fight with Turkey maybe?

Venice – Turks: Look like my handfull with Austria, Milan & maybe Papacy. I hold line at those I now have, no come south more. Early press wrong my account, sorry. U right, Bos is turks...Ok you & I?



Pavlov**Turn 14 Combat to Turn 15 Nexus****Turn 15 Nexus due: 11/22 Tuesday****Players**

ATREIDES:	Cary Nichols	BENE GESSERIT	Bob Robles	BENE TLEILAXU	Paul Bolduc	EMPEROR	Bill Scharf
FREMEN	Steve Koehler	GUILD	Kevin Wilson	HARKONNENS	Ward Narhi	GAME MASTER	Chris Hassler

Nexus

The Bene Tleilaxu/Guild/Harkonnen alliance is reaffirmed. The Atreides and the Emperor form an alliance.

The Harkonnens play a Karama card on the Bene Tleilaxu, causing them to discard 10 spice. The Bene Tleilaxu still have 35 spice visible.

Spice Blow

8 spice in Minor Erg

Bidding

CHOAM Charity recipients: Bene Gesserit

4 cards are up for bid. Eligible bidders are: Bene Tleilaxu (2 cards), Fremen (3 cards), Guild (3 cards), and Harkonnens (4 cards).

Cards are:

Positions

Atreides: 3 tokens Arrakeen, 17 tokens, Gurney Halleck, Thufir Hawat, and Dr. Yueh in the tanks. Kwisatz Haderach available.

Bene Gesserit: 4 tokens and Wanna Marcus in the Tanks, 8 tokens Polar Sink, 7 tokens Pasty Mesa (7), 1 token off-planet

Bene Tleilaxu: *Traps:* none

Emperor: 8 tokens (3 Elite Sadaukar) Carthag, 6 tokens and Count Fenring in the Tanks, 6 tokens (2 Elite Sadaukar) off-planet

Fremen: 9 tokens (2 Fedaykin) Sietch Tabr, 11 tokens (1 Fedaykin), Stilgar, Chani, and Othym in the tanks

Guild: 12 tokens Tuek's Sietch, 8 tokens, Esmar Tuek, and the Guild Administrator in the Tanks

Harkonnens: 15 tokens and Umman Kudu in the Tanks, 5 tokens off-planet

Your Spice: _____

Your Intrigue cards: _____

Your traitor(s): _____

Dogged**End of Game Statements**

Bill Scharf I did ok in the game and got lucky on a few items but not good enough to win, congrats to Dave on the win.

Ward Narhi I really enjoy Silverton but this game really highlit what I think is a serious deficiency. The passenger lines really are the sole determiner of who wins. The claims kind of recede into the background and really play little to no part in the victory. I was playing for second place for most of the game but could not pick up any new passenger lines so could not compete. Next time I play, I'll know that the only way to win is to go for the big payoff passenger lines. I'd be interested in hearing what other people think of this. I have not played too much. Am I right or wrong? Congrats to Partridge for his win. Good planning.

Paul Bolduc Luck just wasn't with me. That +5 showplow failing on the last turn cost me 2nd place. The dearth of claims out my way early in the game almost ran me out of money. The only blatant mistake that I can see I made was that the disputes from Dolores into Durango prevented me from making Albuquerque early enough to justify buying the PAX contract. Sigh. At least I may have gotten the hang of the advanced engines. Congratulations to Dave on a well-played campaign.

Dave Partridge Thanks Chris for running the game. This was my first game of Silverado and I don't know that I can take too much credit for the win. Joe had things well set up and I just tried to carry on the strategy he seemed to have laid out. The big plus was having all the good passenger connections out of Denver, especially the big one to El Paso. That steady income made a big difference. The one thing I think could have improved was my handling of the winter turns. Twice I misplayed them because of the split format of the turns. Would have been nice to run that long passenger run on those turns.

Junk Yard Dog**Turn 11b****Deadline Turn 12a 11/22, Tuesday****Available Cards**

Set 1	Set 2	Set 3	Set 4	Set 5
Waste Disposal	Innovation	Order	Waste Disposal	Order
Innovation	Raw Materials	Bribery	Growth	Hiring/Firing
Growth	Waste Removal	Waste Disposal	Raw Materials	Innovation

Dave chooses set 5

Andy chooses set 1

Cary chooses set 2

Eric chooses set 4

The Players

Player	Play Order	Money	Loans	Raw Material Supply	Growth	Co-workers	Saved Card
Eric Brosius	4	\$44	0	5	17	4	Advisor
Dave Partridge	1	\$4	0	7	18	2	Advisor
Andy York	2	\$38	10	10	18	4	Raw Materials
Cary Nichols	3	\$3	20	4	14	3	

Player	Rationalization	Raw Materials	Waste Reduction	Waste Disposal	Victory Points
Eric Brosius	4/3	5/1	3/6	5	48
Dave Partridge	3/6	2/10	2/10	7	50
Andy York	4/3	3/6	2/10	10	47
Cary Nichols	4/3	3/6	4/3	13	9

Cards

Eric	Dave	Andy	Cary
Waste Disposal	Order	Waste Disposal	Innovation
Growth	Hiring/Firing	Innovation	Raw Materials
Raw Materials	Innovation	Growth	Waste Removal

Discards

Waste Disposal Innovation Raw Materials Order Order Order Hiring/Firing

Laika

1975

1976 due: 1/3 Tuesday

Event Card Resolution/Saved Cards

JOE Fortunate Accident: Habitation Module. Fortunate Accident: Space Station. Accepts government order to launch a manned mission as his next planned mission.
Fortunate Accident: Satellite or Probe

Cain Program Fortunate Accident: Module. Fortunate Accident: Mars Lander, ignores severe setback (-10% on next 3 person capsule mission)

Republic of Texas: Astronaut recruitment is 1MB apiece. Defector goes to Romulus Project.

Romulus Project: One launch facility damaged. 15MB must be spent before it can be used again. Does not fix minor problem (-3% on next space station mission).
Accepts government order to place a man on Mars by 1982.

Purchase Hardware

Republic of Texas buys 1 five person habitation module for 40MB, 6 two stage rockets for 72MB, 17 habitation extenders for 51MB, 1 two person Mars lander for 10MB, and 2 one person capsules for 4MB.

JOE buys 2 one stage rockets for 6MB, 2 astronauts (Smith, Jones) for 4MB, 2 three person habitation modules for 60MB, 7 two stage rockets for 84MB, 2 liquid fuel strap-ons for 6MB, 1 solar sail for 4MB, 2 kickers for 6MB, a fourth launch site for 30MB, and 2 two person capsules for 12MB.

Cain Program buys Mars Probe program for 60MB, 1 three stage rocket for 18MB, and 1 kicker for 3MB.

Romulus Project buys 1 three person habitation module for 30MB, 2 three person capsules for 12MB, and 2 three stage rockets for 36MB.

Conduct Research

Republic of Texas H: 3 dice (1, 1, 5) +7% to Max R&D. 12MB spent.

JOE No research.

Cain Program 5: 8 dice (1, 2, 2, 3, 4, 4, 5, 6) +27%. 40MB spent.

Romulus Project j: 8 dice (1, 2, 2, 4, 4, 5, 5, 6) +29%.

Declare Future Missions

Republic of Texas declares 6 launches, **JOE** declares 4 launches, **Cain Program** declares 2 launches, and **Romulus Project** declares 2 launches.

Your missions:

Missions

No rushing. Launch order is: Romulus Project, Romulus Project, Cain Program, Cain Program, JOE, JOE, JOE, Republic of Texas, Republic of Texas, Republic of Texas, Republic of Texas, Republic of Texas, Republic of Texas, Republic of Texas

JOE continues a Neptune Flyby. In-Route Activities (06%<93%). Mission continues next turn (6 turns until arrival at Neptune).

Republic of Texas continues a Uranus Flyby. In-Route Activities (46%<93%). Mission continues next turn (3 turns until arrival at Uranus).

Republic of Texas continues a Neptune Flyby. In-Route Activities (84%<93%). Mission continues next turn (10 turns until arrival at Neptune).

Republic of Texas continues a Long Duration Manned Orbital (Travis, Kitzman, Simmons). Earth Orbital Activities (79%<96%), Earth Orbital Activities (51%<96%), Earth Orbital Activities (33%<96%), Earth De-Orbital Burn (60%<98%), Re-entry (79%<98%), Recovery (47%<98%). Mission success. +1% to i, Kitzman to 20%, +6MB to budget.

Republic of Texas continues a Long Duration Manned Orbital (Bowie, Milbourn, Ocknaschek). Earth Orbital Activities (27%<97%), Earth Orbital Activities (71%<97%), Earth Orbital Activities (11%<97%), Earth De-Orbital Burn (61%<98%), Re-entry (24%<98%), Recovery (27%<98%). Mission success. +1% to i, Ocknaschek to 40%, Milbourn to 50%, +6MB to budget.

Romulus Project launches a Long Duration Manned Orbital (Brutus, Augustus, Anthony). All safety factors -3% due to lack of successful Medium Duration Manned Orbital. Liftoff (12%<93%), Earth Orbital Burn (21%<89%), Earth Orbital Activities (33%<89%), Docking (20%<95%), Earth Orbital Activities (95%>63%), communication failure, minor problem, backup systems take over, Earth Orbital Activities (46%<63%), install habitation extender (88%>77%), install habitation extender (44%<82%), Earth Orbital Activities (55%<63%), install habitation extender (20%<95%). Mission continues next turn. +1% to C, c, and i, +20% to Space Construction, Brutus to 50%, Augustus and Anthony to 20%.

Romulus Project scrubs a Long Duration Manned Orbital (Lepidus, Octavian, Tiberius) due to lack of room on the space station. -10MB to budget.

Cain Program launches a Grand Tour with Ion Drive. Liftoff (11%<98%), Earth Orbital Burn (17%<98%), Earth Mission Burn (96%<98%). Mission continues next turn, arriving at Jupiter.

Cain Program launches a Medium Duration Manned Orbital (Ventruue, Burhah, Gangrel). Liftoff (24%<98%), Earth Orbital Burn (48%<86%), Earth Orbital Activities (97%>86%), crew saves, Docking (48%<98%), Earth Orbital Activities (93%>68%), crew saves, Earth Orbital Activities (56%<68%), Earth Orbital Activities (07%<68%), Earth De-Orbital Burn (22%<86%), Re-entry (19%<86%), Recovery (21%<86%). Mission success. +1% to c and i, Gangrel to 30%, +6MB to budget.

JOE launches a Long Duration Manned Orbital (Manning, Rodgers). -3% to all safety factors due to lack of completed Medium Term Orbital mission. Liftoff (65%<95%), Earth Orbital Burn (23%<90%), Earth Orbital Activities (23%<90%), Docking (83%<95%), Earth Orbital Activities (31%<78%), Earth Orbital Activities (65%<78%), Earth Orbital Activities (94%>78%), crew saves. Mission continues next turn. +1% to i and b.

JOE launches a Mars Lander. Liftoff (28%<91%), Earth Orbital Burn (94%<98%), Earth Orbital Activities (16%<98%). +1% to D.

JOE launches 2 Solar Sails. Liftoff (83%<98%), Earth Orbital Burn (19%<98%), Earth Orbital Activities (35%<98%).

Republic of Texas launches a Long Duration Manned Orbital (Crockett, Kitzman, Houston). Liftoff (53%<98%), Earth Orbital Burn (05%<98%), Earth Orbital Activities (35%<98%), Docking (69%<98%), Earth Orbital Activities (30%<97%), Earth Orbital Activities (91%<97%), Earth Orbital Activities (76%<97%). Mission continues next turn. +1% to i, Kitzman and Houston to 30%.

Republic of Texas scrubs a Long Duration Manned Orbital (Simmons, Milbourn, Ocknaschek) due to lack of life support on the target space station. -10MB to budget.

Republic of Texas launches a three person capsule to the first space station. Liftoff (59%<98%), Earth Orbital Burn (60%<98%), Docking (32%<98%).

Republic of Texas launches a three person capsule to the first space station. Liftoff (96%<98%), Earth Orbital Burn (67%<98%), Docking (51%<98%).

Republic of Texas launches a three person capsule to the second space station. Liftoff (58%<98%), Earth Orbital Burn (62%<98%), Docking (42%<98%).

Republic of Texas scrubs a three person capsule launch due to lack of equipment.

Players

Player Name	Dennis Cain	Cary Nichols	Bill Scharf	Andy York
Country	Cain Program	Romulus Project	JOE	Republic of Texas
1975 Budget	139	134	235	245
Cash	138	4	80	144
Launch Facilities	3	3	4	6
Astronauts	8	7	6	9

Astronauts: **Cain Program:** Ventruue, Tremere, Brujah (70%), Gangrel (20%), Malkavian, Nosferatu (10%), Toreador, Caitiff (0%), **Romulus Project:** Brutus (50%), Lepidus, Augustus, Anthony (20%), Octavian, Tiberius (10%), Caligula (0%), **JOE:** Roger Manning, Buck Rodgers, Astro (70%), Flash Gordon (50%), Smith, Jones (0%), **Republic of Texas** Travis, Bowie, Crockett, Simmons (70%), Ocnaschek (50%), Boyle, Milbourn (40%), Houston, Kitzman (30%)

Programs and Hardware

Cain Program: Orbital Satellite (1): 1/88%, Interplanetary Satellite (2): 2/98%, Lunar Probe (3): 1/86%, Docking Module (4): 2/98%, Mars Probe (5): 1/77%, One Stage Rocket (A): 5/84%, Three Stage Rocket (C): 0/98%, Kicker (F): 2/89%, Solid Rocket Booster (H): 3/77%, Ion Engine (J): 1/81%, One Person Capsule (a): 5/84%, Three Person Capsule (c): 1/96%, Two Person Module (d): 1/81%, Three Person Space Station (i): 0/68%, Habitation Extenders (p): 0, EVA: 98%, Photoreconnaissance: 100%, Space Construction: 55% IN ORBIT: 1 three person space station (life support: 30)

Romulus Project: Orbital Satellite (1): 2/98%, Interplanetary Satellite (2): 4/72%, Lunar Probe (3): 0/65%, Docking Module (4): 2/98%, One Stage Rocket (A): 0/91%, Two Stage Rocket (B): 0/89%, Three Stage Rocket (C): 1/97%, Liquid Fuel Strap-ons (D): 2/33%, Kicker (F): 1/98%, One Person Capsule (a): 3/86%, Three Person Capsule (c): 1/93%, Two Person Module (d): 0/49%, Three Person Space Station (i): 2/70%, Three Person Habitation Module (k): 2/54%, Habitation Extenders: 0, EVA: 88%, Photorecon: 100%, Space Construction: 100% IN ORBIT: 1 three person space station (life support: 39)

JOE: Orbital Satellite (1): 0/98%, Interplanetary Satellite (2): 0/93%, Lunar Probe (3): 0/72%, Docking Module (4): 4/98%, Mars Probe (5): 0/88%, One Stage Rocket (A): 2/98%, Two Stage Rocket (B): 4/98%, Liquid Fuel Strap-ons (D): 3/92%, Kicker (F): 0/98%, Solid Rocket Boosters (H): 1/82%, Solar Sail(K): 0/95%, One Person Capsule (a): 0/92%, Two Person Capsule (b): 3/94%, One Person Module (e): 0/92%, Three Person Space Station (i): 0/82%, Three Person Habitation Module

(j): 2/86%, Two Person Mars Lander (n): 0/90%, Habitation Extenders (p): 16, EVA: 98%, Hibernation: 1/70%, Photorecon: 100%, Space Construction: 55%. IN ORBIT: 1 three person space station (life support: 30), 17 habitation extenders, 1 two person Mars lander (life support: 2), 2 solar sails.

Republic of Texas: Orbital Satellite (1): 0/98%, Interplanetary Satellite (2): 0/93%, Lunar Probe (3): 0/88%, Docking Module (4): 1/98%, Mars Probe (5): 0/88%, One Stage Rocket (A): 4/98%, Two Stage Rocket (B): 4/98%, Liquid Fuel Strap-on (D): 0/85%, Kicker (F): 0/98%, Solid Rocket Booster (H): 4/80%, Solar Sail (K): 1/95%, One Person Capsule (a): 6/93%, Three Person Capsule (c): 0/98%, Two Person Module (d): 1/91%, Three Person Space Station (i): 1/97%, Five Person Habitation Module (k): 1/93%, Two Person Mars Lander (n): 2/90%, Habitation Extenders (p): 30, EVA: 98%, Photorecon: 100%, Space Construction: 100% IN ORBIT: 1 three person space station with 3 three person capsules docked (life support: 36), 1 three person space station with 2 three person capsules docked (life support: 0). 1.5 five person habitation modules (disassembled).

1975

Draw Event Cards

Bill Scharf: Government Order: Next scheduled launch must be an Orbital Satellite. +10MB to budget if accepted, -20MB to budget if declined.

Andy York: Minor Problem: Pay 10MB or lose 3% on safety factor of next three person capsule mission. -20MB to budget.

Cary Nichols: Corruption in R&D: -1 to all R&D rolls this year. -10MB to budget

Dennis Cain: Program Setback: -10% to most advanced habitation module and Mars Lander (no effect). +5MB to budget.

The deck was reshuffled after Andy's draw.

Final Positions

Player Name	Dennis Cain	Cary Nichols	Bill Scharf	Andy York
Country	Cain Program	Romulus Project	JOE	Republic of Texas
1976 Budget	140	174	230	215
Cash	256	28	103	200
1977 Budget	145	164	240 or 210	195

Retriever

Turn 14

Turn 15 due: 1/3 Tuesday

Commander Actions

Mud Mining Corporation opens the bidding on the Planetary Cruiser at 161 and ORION gets it at 163 (Or1, MWa, Re11, Re11, Re12, Re13, Re15, Re15, Mi17, Mi18, OM20). He opens the bidding on the second Planetary Cruiser at 161 and gets it (MWa, Re16, Mi15, Mi16, Mi20, NC24, RO40) and buys a population factor (Ti8).

ORION moves a population factor from the ore factory to man the Planetary Cruiser.

SD, Inc. opens the bidding on an Outpost at 100 LGM gets it for 110 (Or3, Or3, Wa5, MWa, Re10, Re14, Re16, Mi19). Passes.

Little Green Manufacturing moves a population factor from a ore factory to man the titanium factory.

Bartertown opens the bidding on a Laboratory at 80 and GOD gets it for 88 (Wa5, Wa6, Wa7, Wa7, Wa7, Wa10, Wa10, Ti7, Ti7, Ti11, Ti11). Opens the bidding on Ecoplants at 30 and gets it (Wa5, Wa9, Re16). Buys 3 robots (Wa7, Re11, Re16).

HBDC buys a titanium factory (Wa9, Ti10, Ti11) and moves a population factor from an ore factory to man it.

ACK! Buys a robot (Or4, Wa7).

Golden Orb Developers moves a population factor from a water factory to man the research factory.

The Players

	Outpost Name	Commander	Factories	Upgrades	VP
1	MMC	Eric Brosius	OrF, OrF, WaF, WaF, WaF, WaF, TiF, TiF, NCF	HE, No, Sc, 2OL, Ec, PC, PC	57
2	ORION	Michael Lowrey	OrF, OrF, WaF, WaF, WaF, WaF, ReF, ReF, ReF	2DL, No, 3Sc, OL, La, SS, PC	53
3	SD, Inc.	Andy Lewis	OrF, OrF, WaF, WaF, WaF, WaF, WaF, TiF, TiF, P	HE, No, Wa, 2Ec, OL, 2Ou	38
4	LGM	Dave Partridge	OrF, OrF, WaF, WaF, WaF, WaF, WaF, TiF, ReF, ReF, ReF	2No, Ec, OL, La, Ou	36
5	Bartertown	Andy York	OrF, <i>OrF, WaF, WaF, WaF, WaF, WaF, ReF, ReF</i>	2DL, Wa, 2La, Ro, Sc, Ec	33
6	GOD	Cary Nichols	OrF, OrF, <i>WaF, WaF, WaF, WaF, TiF, TiF, ReF</i>	Wa, HE, Ec, Ro, La	24
7	HBDC	Kevin Wilson	OrF, OrF, WaF, WaF, WaF, WaF, TiF, TiF, TiF, TiF	Wa, HE, OL, Ou	23
8	ACK!	Bill Scharf	<i>OrF, OrF, WaF, WaF, NCF, NCF, NCF</i>	HE, DL, Wa, Sc, Ro	21

LGM is Little Green Manufacturing, GOD is Golden Orb Developers, HBDC is Heavenly Bodies Development Corp, ORION is Orbital Recovery and Intergalactic Opportunity Network, MMC is Mud Mining Corporation

Available Upgrades

New Arrivals: Moon Base, Moon Base, Space Station, Outpost, Moon Base

Upgrade	Minimum Bid	Available	Not Yet Delivered
Robots (Ro)	50	2	0
Laboratory (La)	80	0	0
Ecoplants (Ec)	30	0	0
Outpost (Ou)	100	1	0

Upgrade	Minimum Bid	Available	Not Yet Delivered
Space Station (SS)	120	1	4
Planetary Cruiser (PC)	160	0	3
Moon Base (MB)	200	4	2

Resource Cards

SD, Inc., MMC, ORION, HDBC, and LGM took Mega Water cards. HDBC also took a Mega Titanium card.

Dogwood**Epoch IV Goths, Huns, and Byzantines****Epoch IV T'ang Dynasty, Arabs, and Khmers due: 1/3 Tuesday****Epoch IV**

The Time Traveler (Anderson) plays Rebellion in Central America (vs. Mayans; R: 5, 3; M: 5; R: 3, 1; M: 4; loses). Plays Kingdom in the Gold Coast (army, city, and fort Gold Coast). GOTHs: Army Danubia, Dalmatia (vs. Macedonians; G: 6, 1; M: 5, 3; wins), Pindus (vs. Macedonians; G: 1, 1; M: 6, 3; loses), Pindus (vs. Macedonians; G: 5, 1; M: 3, 1; wins, Capital reduced to city), Northern Apennines (vs. Macedonians; G: 3, 1; M: 5; loses), Northern Apennines (vs. Macedonians; G: 4, 2; M: 2; G: 5, 1; M: 5; G: 6, 3; M: 1; wins), Southern Apennines (vs. Romans; G: 6, 6; R: 1; wins, Capital reduced to city), Dnieper, Central Europe (vs. Celts; G: 5, 4; C: 5; G: 4, 3; C: 1; wins), Caucasus (vs. Scythians; G: 5, 3; S: 6; loses). Points: Dominance of Southern Europe (6), Presence in Northern Europe (2), 3 cities (3), and 2 Monuments (2) for 13 points.

The Horde (Geggus) plays Kingdom in the Malay Peninsula (army, city, and fort Malay Peninsula, Gupta army retreats to Sumatra) HUNS: Plays Weaponry. Army Western Steppe, Dneipr (vs. Goths; H: 4+1, 2+1; G: 6; loses), Dneipr (vs. Goths; H: 5+1, 3+1; G: 1; wins), Danubia (vs. Goths; H: 4+1; 4+1; G: 3; wins), Dalmatia (vs. Goths; H: 5+1, 3+1; G: 6, 5; H: 6+1, 3+1; G: 6, 5; wins), Turanian Plain (vs. Romans; H: 6+1, 1+1; R: 2; wins), Hindu Kush (vs. Romans; H: 5+1, 5+1; R: 4, 3; wins), Persian Plateau (vs. Sassanids; H: 6+1, 3+1; S: 1; H: 2+1, 1+1; S: 1; wins), Zagros (vs. Sassanids; H: 6+1, 1+1; S: 4; H: 6+1, 4+1; S: 6; wins, Capital reduced to city), Upper Tigris (vs. Romans; H: 2+1, 1+1; R: 6; loses), Upper Tigris (vs. Romans; H: 6+1, 4+1; R: 6; wins), Tarim Basin (vs. Hsuing-nu; Hu: 6+1, 4+1; Hs: 2, 1; wins), Levant (vs. Romans; H: 4+1, 2+1; R: 1; wins), Upper Indus (vs. Sassanids; H: 6+1, 1+1; S: 1; wins). Builds Monument Tarim Basin. Points: Dominance in Middle East (6), Northern Europe (4), and Eurasia (2), Presence in China (3), India (3), Southern Europe (3), and Southeast Asia (2), two cities (2), 6 Monuments (6) for 31 points.

Retropolis (Cain) plays Disaster on Eastern Deccan (Monument destroyed, Capital reduced to city). BYZANTINES: Plays Naval Supremacy. Army and Capital Balkans (Macedonian army destroyed), fleet Black Sea (vs. Marching Through the Ages; R: 4+1, 3+1; MTtA: 6; loses), Black Sea (vs. Marching Through the Ages; R: 3+1, 1+1; MTtA: 2; wins), army Danubia (vs. Huns; B: 6, 6; H: 2; wins), fleet Eastern Mediterranean (vs. Turanians; R: 6+1, 2+1; T: 6; R: 3+1, 3+1; T: 2; wins), army Western Anatolia (vs. Persia; B: 2, 1; P: 2; B: 1, 1; P: 6; loses), Western Anatolia (vs. Persia; B: 6, 5; P: 1; wins), Nile Delta (vs. Rome; B: 4, 1; R: 5, 3; loses), Nile Delta (vs. Rome; B: 6, 2; R: 3, 3; wins), Morea (vs. Macedonia; B: 6, 1; M: 6, 3; B: 5, 1; M: 5, 4; B: 3, 2; M: 3, 2; B: 6, 5; M: 6, 3; B: 5, 4; M: 5, 4; B: 5, 3; M: 4, 2; wins), Pindus (vs. Goths; B: 6, 1; G: 3; wins, city eliminated), Dalmatia (vs. Huns; B: 6, 5; H: 3; wins). Points: Dominance in Southern Europe (6), Presence in North Africa (2), Middle East (3), China (3), Northern Europe (2), Southeast Asia (2), and Eurasia (1), 1 Capital (2), 1 city (1), 1 Monument (1), and 3 Seas (3) for 26 points.

Players

Player Name	Player Faction Name/Color	Empire Strength Points	Victory Points
Andy Lewis	Marching Through the Ages (green)	26	57
Cary Nichols	Turanians (black)	28	26
Kevin Wilson	Royal Manticoran Historical Society (purple)	29	84
Dave Anderson	The Time Traveler (orange)	32	63
Chris Geggus	The Horde (yellow)	34	71
Dennis Cain	Retropolis (red)	34	69
Paul Bolduc	Arachnids (blue)	36	46

Positions

Turanians: MACEDONIA: Army and city Crete, two armies Pyrenees, armies Central Massif, Western Iberia.

The Horde: CELTS: Armies Northern Gaul, Albion. MALAYAN KINGDOM: Army, city, and fort Malayan Peninsula. HUNS: Army, city, and Monument Zagros, army and Monument Levant, Upper Tigris, Persian Plateau, Upper Indus, Tarim Basin, armies Hindu Kush, Turanian Plain, Western Steppe, Dniepr

Marching through the Ages: NORTH AMERICAN MIGRANTS: Army West Indies. PERSIA: Armies Eastern Anatolia, Middle Tigris. MAYANS: Army and Capital Central America, army Guyana Highlands. HSUING-NU: Army and city Wei River, army and Monument Chekiang, armies Mongolia, Yellow River, Great Plain of China

Retropolis: Fleets South China Sea, Black Sea, Eastern Mediterranean. CHOU DYNASTY: Two armies Irrawaddy, army Szechuan. IBERIAN KINGDOM: Army, city, and fort Southern Iberia. HAN DYNASTY: Armies Yangtze Kian, East Indies, Eastern Steppe. BYZANTINES: Army and Capital Balkans, army and Monument Nile Delta, armies Danubia, Western Anatolia, Dalmatia, Pindus, Morea.

Royal Manticoran Historical Society: Fleet Bay of Bengal. ASSYRIA: Two armies Western Deccan. NILE KINGDOM: Army, city, and fort Upper Nile.

SASSANIDS: Army, city, and Monument Ganges Delta, army and Monument Lower Indus, two armies Persian Salt Desert, army Ganges Valley. GUPTAS: Army and city Eastern Deccan, two armies Sumatra, armies Eastern Ghats, Mekong, Si-Kyang.

The Time Traveler: GOLD COAST KINGDOM: Army, city, and fort Gold Coast. GOTHs: Army, city, and Monument Southern Apennines, army and Monument Central Europe, army Northern Apennines.

Arachnids: Fleets Western Mediterranean and Red Sea. **SUB-SAHARAN MIGRANTS:** Armies Central Africa and Congo Basin. **ROMANS:** Army, city, and Monument Shatts Plateau, two armies Nubia, armies Libya, Palestine.

Event CardsEpoch II Empire**Salty Dog****Seafarers of Catan****Turns 3.3 to 4.3****Deadline Turns 4.4 to 5.4 1/3, Tuesday**Turn 3

Cary rolls a 6. Dave and Cary each receive 1 brick, and Bill receives 1 ore.

Trades 3 brick for 1 lumber at the ? Port. Builds a road from D14 to D15.

During the special build turn: Chris builds a road from C13 – B13.

Bill rolls a 3. Passes.

Chris rolls a 6. Dave and Cary each receive 1 brick, and Bill receives 1 ore.

Passes.

Ward rolls a 4. Dave and Chris each receive 1 grain, Bill and Ward each receive

1 lumber. Ward trades 1 lumber to Kevin for 1 wool. Passes.

Turn 4

Kevin rolls a 7. Moves the robber to the 8 Field and steals a brick from Cary. Builds a ship from G10 – G9 (ocean hex discovered). During the special build turn:

Bill builds a ship from D18 – D19 (discovers a 6 Forest hex, receives 1 lumber).

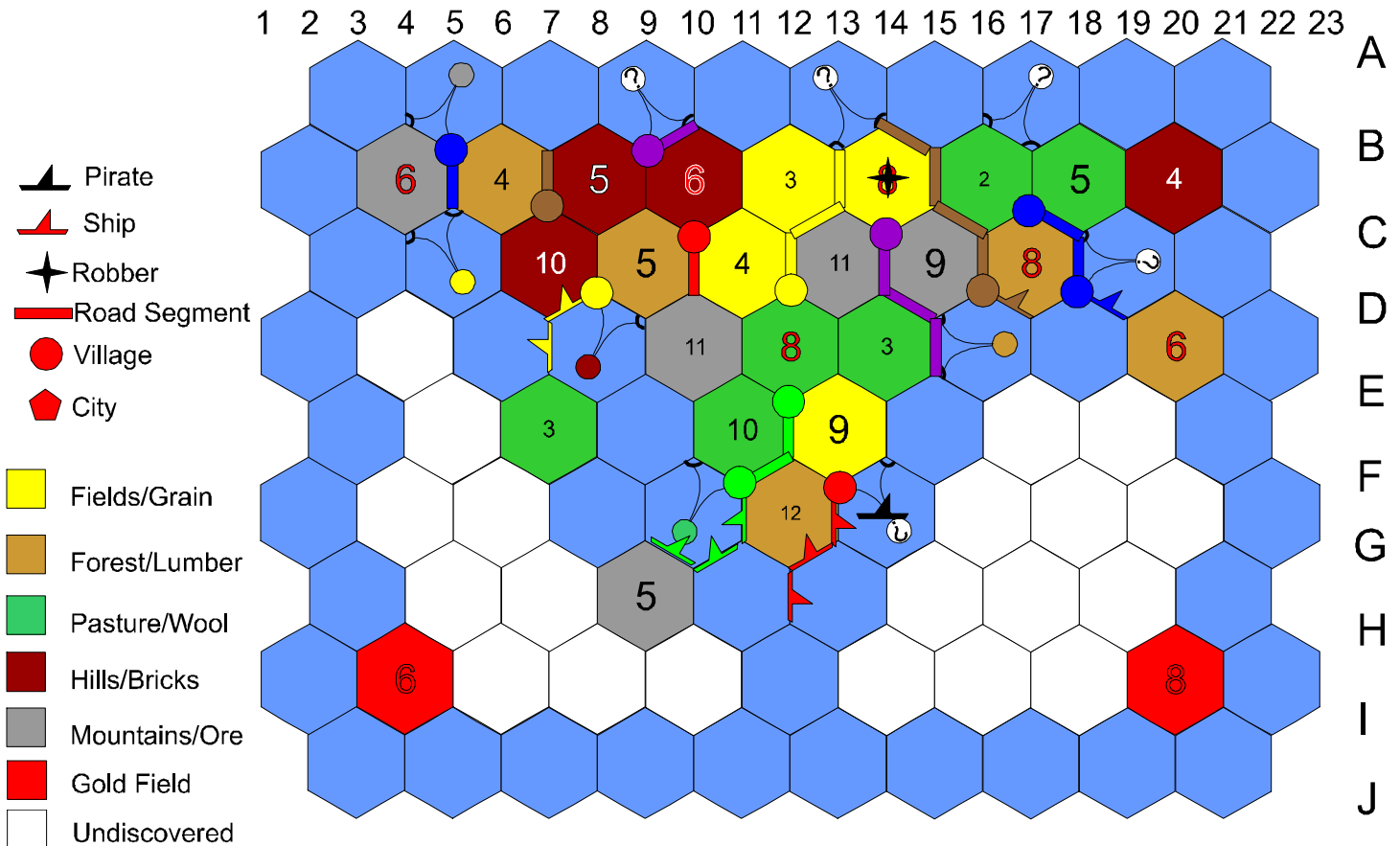
Dave rolls a 6. Dave and Cary each receive 1 brick, and Bill receives 1 ore. Passes.

Cary rolls an 8. Kevin and Chris each receive 1 wool, Ward receives 1 lumber, and Bill receives 2 lumber. Trades 3 brick for 1 lumber at the ? Port and builds a road from D15 – E15. During the special build turn: Ward builds a road from B15 – B14 (gains longest trade route).

Open Trades

Dave offers one brick or one grain for one lumber

Dave offers one brick for one wool

Turn 4 Rolls

Bill 5

Chris 7

Ward 11

Turn 4 Rolls

Bill 10

Kevin 7

Dave 9

Cary 5

The Players

Player	Color	Grain	Wool	Lumber	Brick	Ore	Development Cards	VP
Kevin Wilson	Green		2	1	1	1		2
Dave Partridge	Red	2		4				2
Cary Nichols	Purple	1		1				2
Bill Scharf	Blue		1		3	4		3
Chris Geggus	Yellow	2	2					2
Ward Narhi	Brown		2					4*

* Longest trade route

Dog Chow**Age of Renaissance****Initial Bidding****Deadline Initial Token Purchase, and Turn 1 Phases 1 through 3 1/3, Tuesday**Initial Bids

Paul Bolduc bids \$3, chooses Barcelona

Cary Nichols bids \$3, chooses Hamburg

Bob Robles bids \$2, chooses London

Dennis Cain bids \$1, chooses Venice

Steve Koehler bids \$0, chooses Genoa

Caleb Cousins resigns, replaced by Michael Longdin, bids \$0, gets Paris

The Players

Player	Country	Misery	Tokens	Money	Order	Dominance	Ships	Advances
Paul Bolduc	Barcelona	0		\$37		0		
Cary Nichols	Hamburg	0		\$37		0		
Bob Robles	London	0		\$38		0		
Dennis Cain	Venice	0		\$39		0		
Steve Koehler	Genoa	0		\$40		0		
Michael Longdin	Paris	0		\$40		0		

Players are listed in reverse tie breaking order.

Commodity Log

Commodity	Bob	Cary	Michael	Steve	Paul	Dennis
Stone (2)	--	--	1	--	--	--
Wool (3)	1	--	--	--	--	--
Timber (4)	--	1	--	--	--	--
Grain (5)	--	--	--	--	--	--
Cloth (6)	--	--	--	1	--	1
Wine (7)	--	--	--	--	1	--
Metal (8)	--	--	--	--	--	--
Fur (9)	--	--	--	--	--	--
Silk (10)	--	--	--	--	--	--
Spice (11)	--	--	--	--	--	--
Gold (12)	--	--	--	--	--	--
Ivory (12)	--	--	--	--	--	--

Cards**Sled Dog****Kremlin****Gamestart****Deadline Initial Influence Allocation 1/3, Tuesday**Politburo

Office	Policitian	Condition	Influence
Party Chief	Nestor Aparatschik (A)	80 +	
KGB Head	Antonj Talksalott (J)	67	
Foreign Minister	Mikhail Strychnin (T)	57	

Office	Politician	Condition	Influence
Defense Minister	Iwan Manjak (P)	61	
Ideology Minister	Igor Doberman (L)	65	
Industry Minister	Boris Badenuff (X)	53	
Economy Minister	Oleg Satin (O)	62	
Sport Minister	Leonid Bungaloff (W)	54, strong	

Candidates: C, F, Q, U, V

People: B, D, E, G, H, I, K, M, N, R, S, Y, Z

Siberia: None (yet)

Players

Player	Faction Name
Chris Geggus	
Bill Scharf	
Dennis Cain	
Bob Robles	
Mike Scott	
Michael Longdin	

Notes

We are using all of the Intrigue cards provided by the Revolution variant, as well as a few more provided in *The General*. Please let me know if you need explanations of any of your cards. Also we are using free allocation of your initial IP's. You may allocate 55 total IP's to in any politicians of your choice, so long as you do not allocate more than 55.

Pedagoguery

Orbital dynamics is frequently counter-intuitive for those of us born and raised on a planet. For example, if you speed up, you end up slowing down. This is because your increased energy lifts you into a higher orbit, and therefore your orbital speed decreases. Tethers in orbit introduce many additional peculiarities, and electrodynamic tethers provide startling capabilities.

If you were to take two large masses, attach them together by a tether, and place them in orbit, an interesting thing happens. The masses will move apart from each other and eventually pull the tether taught. Since the lower mass is in a faster orbit, it pulls the upper mass along. Likewise, the upper mass will act as a drag on the lower mass, slowing it down. The end result is that the tether is perfectly aligned radially outwards from the orbited body. A small pseudo gravity is felt at both masses – inward at the inner mass and outward at the outer mass. The strength of this pseudo gravity depends on the orbital speed of the system and the length of the tether – the faster the orbit and the longer the tether, the stronger the force.

These principals work when you are in close orbit around a massive body, such as low Earth orbit. For an interplanetary mission, they would not be sufficient, but adjustments can be made. For example, the system can be spun around its center of gravity -- thus providing pseudo gravity and helping potential astronauts maintain bone density.

Effects get really interesting, however, when the tether is electrically conductive and the surrounding environment has a reasonably strong magnetic field. Movement of a conductive object in a magnetic field leads to induced currents. Those currents in turn interact with the magnetic field to apply a force on the object carrying the current. The direction of the force depends on the direction of the current. Normally, the current will be from the upper mass to the

lower mass. This current can be tapped for energy, but there is a drawback. The energy has to come from somewhere, and that somewhere is the orbital energy of the system. So tapping this energy leads to a drag on the object's orbit, causing the orbit to decay. Not necessarily a desired outcome. However, if you pump energy into the tether, reversing the current, the interaction with the magnetic field leads to thrust, increasing your orbital energy and thus your orbit.

These effects lead to some pretty startling capabilities. Imagine a space probe that utilizes a tether to explore the moons of Jupiter. Jupiter has a very strong magnetic field, allowing extraordinary maneuverability of an electrodynamic tether without expending any rocket fuel. All they would need is a large battery system to store electricity while the satellite decelerates, and a medium to small generation capacity to provide extra electricity for acceleration along with whatever is stored in the battery. The battery and generator would also provide all the energy that the satellite would need to operate.

Other potential uses for tethers can be found closer to home. Picture, for example a space station composed of two pieces connected by an electrodynamic tether. If the station were equipped with solar panel arrays, it could easily adjust its orbit up or down as needed, never having to worry about orbital decay due to atmospheric drag. By the same token, low Earth orbit is getting quite crowded with dead satellites, expended boosters, and other space junk. It all eventually falls back to Earth, but a satellite in a 1000 km orbit typically takes 2000 years to fall back to Earth. A simple electrodynamic tether can accelerate that. If deployed at the end of the satellite's operational life, it can rapidly decelerate the satellite to allow it to burn up in the atmosphere, no longer cluttering up near Earth space.

Next issue, I will talk about the dynamics of accretion disks.

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Standbys

Anybody who gets onto my standby list automatically receives one free issue of *S.O.B.* In addition, if you actually submit standby orders, you get another free issue. So, let's get those people standing by. The current standby list is:

Machiavelli (gunboat and regular): Steve Koehler, Bill Scharf, Bob Robles, Mike Scott, Ward Narhi, Paul Bolduc, Pasquale Giovine, Andy York, Cary Nichols, Lee McConnell, Dave Partridge, Dale Horsely **Dune:** Steve Koehler, Paul Bolduc, Kevin Wilson, Ward Narhi, Andy York, Cary Nichols, Bill Scharf, Dave Partridge **New World:** Andy York, Bill Scharf, Cary Nichols, Dave Partridge **Merchant of Venus:** Paul Bolduc, Carrie Lewis, Bob Robles, Andy York, Cary Nichols, Dave Partridge **Outpost:** Michael Lowrey, Kevin Wilson, Andy York, Cary Nichols, Bill Scharf, Dave Partridge **History of the World:** Andy Lewis, Paul Bolduc, Kevin Wilson, Chris Geggus, Andy York, Cary Nichols, Dave Partridge **Stellar Conquest:** Paul Bolduc, Kevin Wilson, Andy York, Cary Nichols, Dave Partridge **Liftoff!:** Dennis Cain, Andy York, Cary Nichols, Bill Scharf, Dave Partridge **Age of Renaissance:** Bob Robles, Michael Lowrey, Cary Nichols, Dave Partridge, Michael Longdin **Kremlin:** Andy York, Andy Lewis, Pasquale Giovine, Cary Nichols, Bill Scharf, Dave Partridge, Michael Longdin **Silverton:** Cary Nichols, Bill Scharf, Dave Partridge **Settlers of Catan:** Michael Lowrey, Chris Geggus, Cary Nichols, Dave Partridge **Gunslinger:** none **Industrial Waste:** Michael Longdin

Standby Calls

You (if checked) ✍ for Milan in Dogfight
Michael Longdin for Paris in Dog Chow