

### Notes from Hades

I hope everyone's holidays were pleasant. Here at chez Hassler, we had a good time, despite the fact that we spent two weeks at home with a couple of three-year-olds who were not able to get outside as much as they should have due to the weather. In any event, it was a nice, somewhat quiet time at home with the family.

This issue sees the end of Retriever, as Eric Brosius edges over the 75 victory point mark to win it. Congratulations to Eric. We will start up Sirius next issue.

The next deadline is **Tuesday, February 14 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

<b>Howling at the Moon</b>	Letter Column	Page 1
<b>Off the Leash</b>	Machiavelli	Page 2
<b>Dirty Deeds...</b>	Machiavelli	Page 3
<b>Dogfight</b>	Machiavelli	Page 4
<b>Pavlov</b>	Dune	Page 5
<b>Junk Yard Dog</b>	Industrial Waste	Page 6
<b>Laika</b>	Liftoff	Page 7
<b>Retriever</b>	Outpost	Page 9
<b>Dogwood</b>	History of the World	Page 10
<b>Salty Dog</b>	Settlers of Catan	Page 11
<b>Dog Chow</b>	Age of Renaissance	Page 12
<b>Sled Dog</b>	Kremlin	Page 12
<b>Pedagogy</b>		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.

**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. **Starts next issue!**

**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, Chris Geggus, and Mike Scott need 1 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, Pasquale Giovine, and Mike Scott, will take up to 3 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

### Bob Robles

Happy holidays to one and all! One book, took me a while to work through. But first, an editorial: picture a great power embroiled in a long war against a cunning and able foe. This great power is able to project its military power with little fear of interference anywhere in the known world. This great power commits itself to a military campaign in an area of marginal military significance after demagogues sawy the populace to commit blood and treasure. Disaster follows. Sound familiar? Then I strongly suggest you read, 'The Peloponnesian

War' by Donald Kagan. Professor Kagan condenses his enormous history of this war to a very readable volume. Thucydides history is a great companion for its personal viewpoint on the war. What I found very interesting about this book is not the inevitable comparisons to the Cold War (Athens vs Sparta) or the second Iraq war, but how a democracy fights wars. Very enlightening. The history is overwhelmingly from Athens' viewpoint, possibly because Spartan records were much fewer?

## Off the Leash

### Advanced Game, Plague, Famine, Special Military Units, Conquest, Moneylenders, Gray Press, Ultimate Victory, Gunboat Miller Number 2001Fpw10 Fall 1466

**Deadline for Winter/Spring 1467: 2/14 Tuesday**

*Naples completes the conquest of Florence, but Venice invades the Neapolitan heartland. France plays it defensively.*

#### Outstanding Debt

None.

#### Orders

- FLORENCE** 🏹: No units, Our!
- FRANCE** 🏹: A TYROLEA holds, A SWISS supports A Tyrolea, A COMO supports A Tyrolea, A PAVIA supports A Parma, [A PARMA supports F Modena (cut)], A FORNOVA supports F Modena, F MODENA supports F Golf of Lions to Ligurian Sea, F Gulf of Lions to LIGURIAN SEA
- NAPLES** 🏹: A Ancona to AQUILA, A Spoleto to URBINO, A Perugia to SIENNA, A (EM) Arezzo to FLORENCE, A PIOMBINO converts to G, [A PISA to Lucca], A PISTOIA supports A Pisa to Lucca, F TYRRHENIAN SEA supports F Western Mediterranean, F WESTERN MEDITERRANEAN supports F Tyrrhenian Sea
- VENICE** 🏹: [A AUSTRIA to Tyrolea], A CARINTHIA supports A Milan, A TRENTO supports A Milan, A MILAN supports A Austria to Tyrolea, A CREMONA supports A Milan, [A MANTUA to Parma], A FERRARA supports A Bologna, A BOLOGNA supports A Lucca, [A LUCCA supports A Bologna (cut)], A DALMATIA to BARI, F UPPER ADRIATIC to ANCONA, F LOWER ADRIATIC transports A Dalmatia to Bari, F DURAZZO to IONIAN SEA

Your treasury:

#### Notes

The concession to Venice fails with 1 no vote and 1 abstention. Florence has been eliminated and conquered by Naples. Naples gains the Florentine variable income die rolls and treats the Florentine home areas as his own home areas.

#### Press

**France – Naples:** Venice has at least 18 cities now and with 23 he wins. He can take Bari freely and, if you continue to look at him amorphously, with his ducats can disband four mine, or your, armies and take the remaining cities he needs. Please give the concession if you don't intervene now.

**Naples – All:** Happy New Year.... as stated last turn, I leave Bol to Venice, and Mod to France, unless attacked....

#### Spring 1467 Famine

**Poor Year – Row Only.** Croatia, Florence, Turin, Mantua, Capua, Treviso

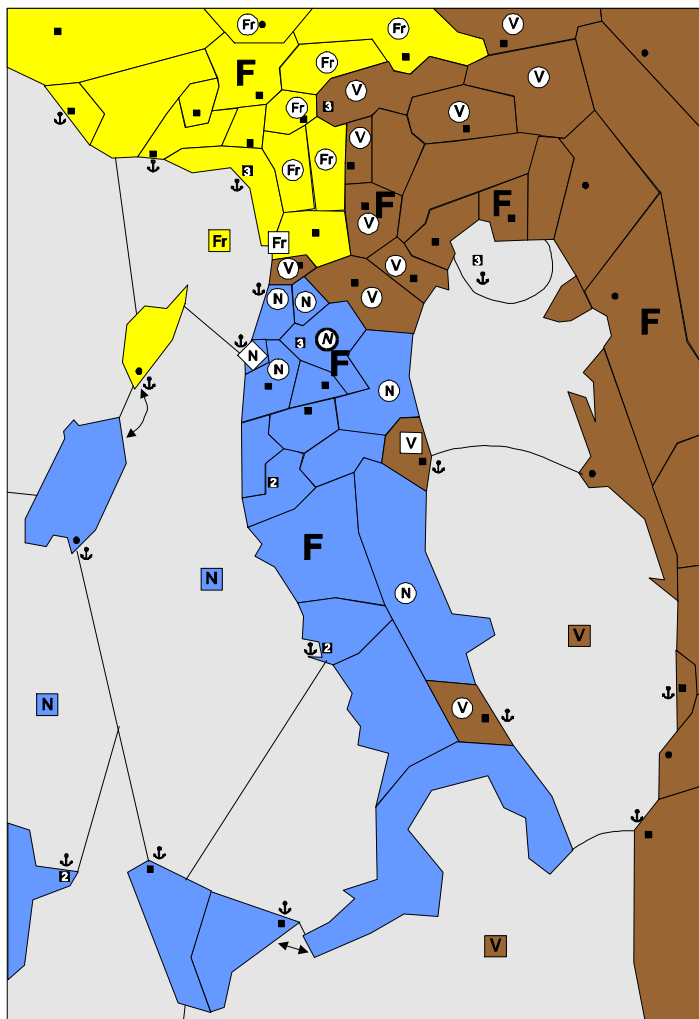
#### Spring 1467 Income

Provinces and cities that are underlined do not produce income while those that are in italics could change hands depending on retreats.

#### Provinces

FRANCE:	Avignon, Swiss, Marseilles, Provence, Saluzzo, <u>Turin</u> , Como, Tyrolea, Pavia, Fornova, Genoa, Montferrat, Savoy, Corsica, Parma, Modena	15
NAPLES:	Spoleto, Perugia, Rome, <u>Capua</u> , Naples, Aquila, Salerno, Otranto, Messina, Palermo, Sardinia, Tunis, Arezzo, Sienna, Urbino, Patrimony, Piombino, Pisa, Pistoia, <u>Florence</u>	18
VENICE:	Ferrara, <u>Mantua</u> , Cremona, Milan, Bergamo, Verona, Padua, <u>Treviso</u> , Friuli, Trent, Istria, Carniola, <u>Croatia</u> , Dalmatia, Ragusa, Albania, Durazzo, Carinthia, Austria, Slavonia, Bosnia, Herzegovina, Hungary, Bologna, Lucca, Ancona, Bari	24

Off the Leash



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

#### Seas

FRANCE:	Ligurian Sea	1
NAPLES:	Western Mediterranean, Tyrrhenian Sea	2
VENICE:	Venice, Lower Adriatic, Ionian Sea	3

#### Cities

FRANCE:	Avignon, Swiss, Marseilles, Saluzzo, <u>Turin</u> , Tyrolea, Pavia, Genoa (3), Montferrat, Savoy, Corsica, Modena	13
NAPLES:	Perugia, Rome (2), Naples (2), Messina, Palermo, Sardinia, Tunis (2), Arezzo, Sienna, Piombino, Pisa, <u>Florence (3)</u>	14
VENICE:	Ferrara, <u>Mantua</u> , Cremona, Milan (3), Padua, <u>Treviso</u> , Trent, Carniola, <u>Croatia</u> , Dalmatia, Ragusa, Albania, Durazzo, Austria, Hungary, Bologna, Lucca, Ancona, Bari, Venice (3)	21

Totals

Variable income die roll was 2.

Country	Variable	Provinces	Seas	Cities	Gross
FRANCE	7	15	1	13	36
NAPLES	6	18	2	14	40
VENICE	8	24	3	21	56

Game Summary

	'54	'55	'56	'57	'58	'59	'60	'61	'62	'63	'64	'65	'66	'67
Aus	3	2	3	4	5	4	2	4	0	0	0	0	0	0
Flo	3	6	8	7	6	6	6	7	11	10	8	7	6	0
Fra	3	7	8	9	10	12	13	10	12	12	14	12	11	12
Mil	3	5	5	2	2	3	0	0	0	0	0	0	0	0
Nap	4	4	5	6	7	7	8	9	8	7	7	10	10	12
Pap	4	3	2	2	0	0	0	0	0	0	0	0	0	0
Tur	3	5	5	6	4	1	0	0	0	0	0	0	0	0
Ven	4	6	7	6	9	10	14	14	12	15	13	15	15	20

**Dirty Deeds Done Dirt Cheap**

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

**Miller Number 2000Fpw10**

**Summer 1056**

**Deadline for Fall 1056 2/14, Tuesday**

*Venice is hit hard by plague, and the Pope's holdings suffer massive rebellion after his assassination. Pisa and the Muslims make advances, while Byzantium is stymied.*

Spring 1056 Retreats

Muslims retreat A Arezzo to garrison

Venice retreats A Milan to Parma, F Lower Adriatic to Ancona

Summer 1056 Plague

**Poor Year – Row Only:** Bergamo, Ancona (Venice F destroyed), Parma (Venice A destroyed), Mantua (Venice A destroyed), Istria

Expenditures

The Pope fails to repay his debt to the moneylenders and is assassinated. All units hold, Aquila, Capua, Spoleto, Urbino, Patrimony, Perugia, and Sienna rebel. The Pope may never again borrow money from the moneylenders.

Outstanding Debt

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

Orders

BYZANTINES (Robles): A Herzegovina to RAGUSA, [F (EM) DURAZZO to Lower Adriatic]

MUSLIMS (Wilson): A Palermo to CAPUA (rebellion liberated), A SALERNO supports F Otranto to Bari, F SARDINIA supports F Tyrrhenian Sea, F TYRRHENIAN SEA transports A Palermo to Capua, F NAPLES supports F Tyrrhenian Sea, F Otranto to BARI, F LOWER ADRIATIC holds, [G AREZZO converts to A]

PAPACY (Scott): [A Bari holds (DISLODGED, retreat garrison, OTB)], A AQUILA holds, A ROME holds, A URBINO holds, A SIENNA holds, A (EM) AREZZO holds

PISA (Roalstad): A Milan to BERGAMO, A Pavia to PARMA, A Montferrat to PAVIA, A BOLOGNA supports A Pisa to Florence, A Pisa to FLORENCE, F LIGURIAN SEA supports F Piombino, F PIOMBINO supports F Ligurian Sea

VENICE (Partridge): [A Florence supports Papal A Sienna (cut, DISLODGED, retreat Pistoia, garrison, OTB)], A Padua to FERRARA, [A CROATIA to Dalmatia], [F DALMATIA to Lower Adriatic], F UPPER ADRIATIC supports F Dalmatia to Lower Adriatic

Your treasury:

Press

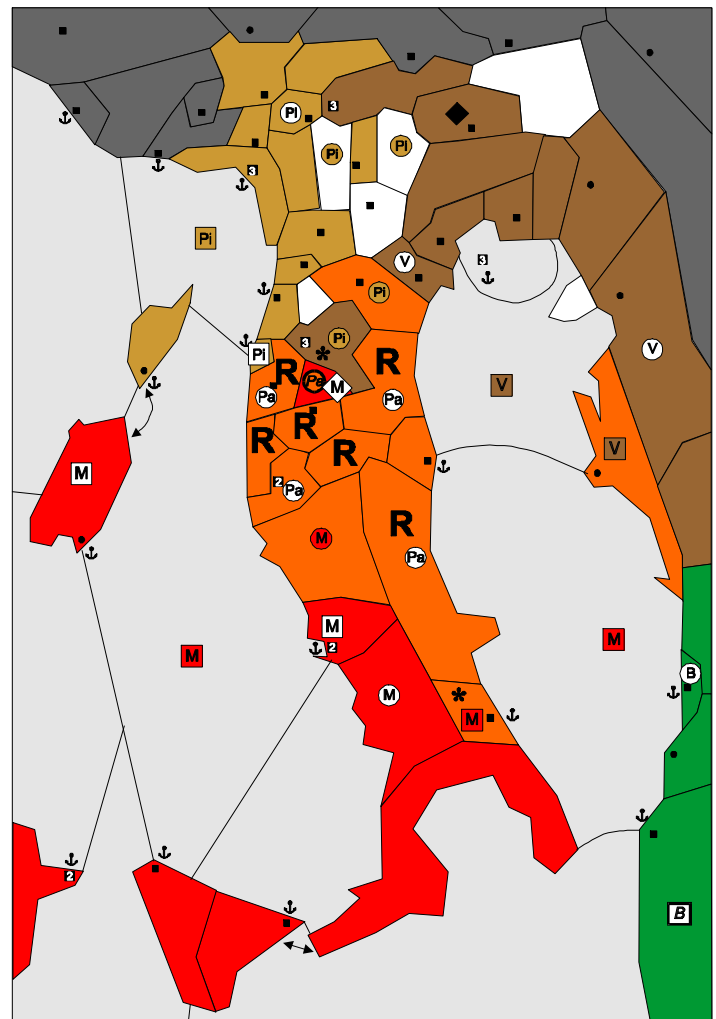
**Byzantium – Muslims:** Hmmm, burnt at the stake or beheaded by Saracens.

What a choice!

**Byzantium – Pisa:** Is the Pope with you?

**Venice – GM:** Just shoot me, it would be more humane!

Dirty Deeds Done Dirt Cheap



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

## Dogfight

Advanced Rules, Natural Disasters, Special Military Units, Conquest, White Press, Gunboat, Standard Victory  
Miller Number 2005Apw10

Summer 1455

Deadline for Fall 1455 2/14, Tuesday

Austria joins the attack on Milan, just as the new Duke takes over and retakes Pavia from the French. Venice looks set to move northwards while the Pope continues to encircle Florence. Florence is able to strike back, unlike the Turks, who find themselves sorely pressed by Naples.

### Spring 1455 Retreats

Pope retreats A Sienna to Piombino, F Upper Adriatic to Ancona

### Orders

- AUSTRIA 🏹: A Tyrolea to MILAN, A TRENT supports A Tyrolea to Milan, A Carniola to CARINTHIA
- FLORENCE 🏹: A PISA supports A Florence, A FLORENCE supports A Sienna to Arezzo, A (EM) Sienna to AREZZO, G FLORENCE supports A Florence, G AREZZO supports A Sienna to Arezzo
- FRANCE 🏹: A TURIN besieges, [A Pavia supports Austria A Tyrolea to Milan (cut, DISLOADED, retreat Como, Fornova, garrison, OTB)], A SAVOY to GENOA, A PROVENCE to SAVOY
- MILAN 🏹: A MONTFERRAT supports A Parma to Pavia, [A Milan supports A Parma to Pavia (cut, DISLOADED, retreat Como, Parma, garrison, OTB)], A Parma to PAVIA
- NAPLES 🏹: [A BARI to Aquila], [F OTRANTO to Lower Adriatic], F Tyrrenian Sea to GULF OF LIONS, F Western Mediterranean to TUNIS, F CENTRAL MEDITERRANEAN supports F Western Mediterranean to Tunis, F (EM) Ionian Sea to DURAZZO
- PAPACY 🏹: A PIOMBINO besieges, A Bologna to PISTOIA, A Urbino to BOLOGNA, [A Arezzo besieges (DISLOADED, retreat Perugia, Urbino, OTB)], A Perugia to PATRIMONY, F ANCONA converts to G
- TURKS 🏹: [A HERZEGOVINA to Aquila], F LOWER ADRIATIC transports A Herzegovina to Aquila, [F Durazzo to Ionian Sea (DISLOADED, retreat Albania, garrison, OTB)], [F Tunis holds (DISLOADED, retreat garrison, OTB)]
- VENICE 🏹: A CREMONA supports A Mantua to Bergamo, A Mantua to BERGAMO, A VERONA supports A Mantua to Bergamo, A FRIULI supports F Upper Adriatic to Caniola, F Venice to UPPER ADRIATIC, F Upper Adriatic to CARNIOLA, F Croatia to DALMATIA
- Your treasury:

### Notes

A new player has taken over for Milan.

### Press

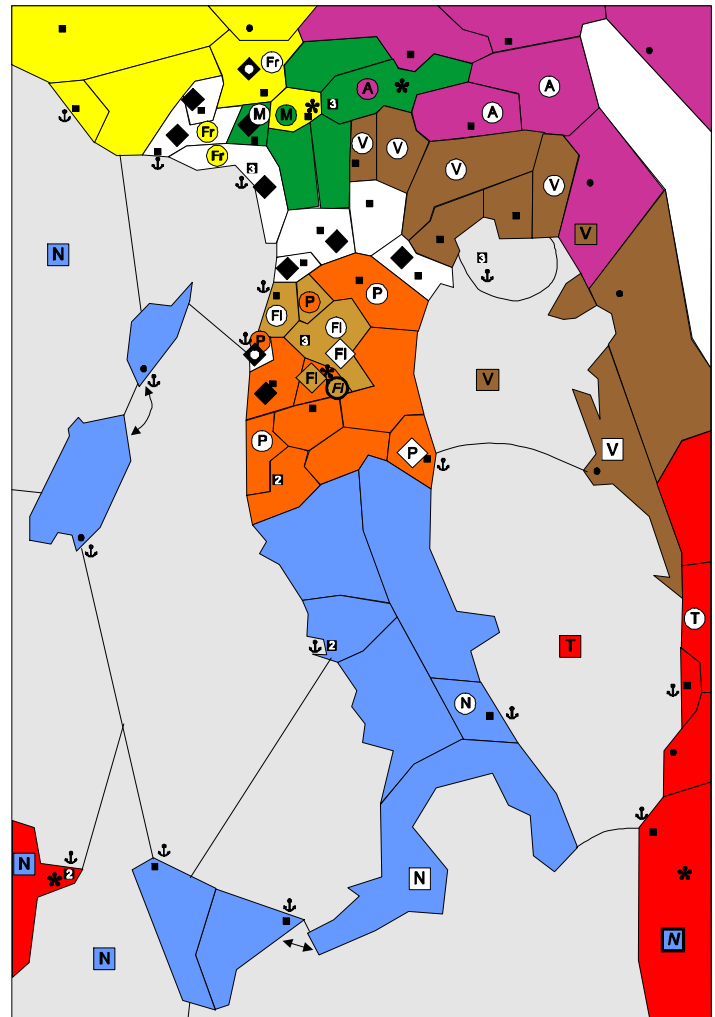
**Austria – All:** Is anyone watching Naples?

**Austria – Venice:** I shall continue my backpedaling.

**Florence – Pope:** I really would like peace despite your stabbing me in the back. We will only kill each other with out Death's Embrace.

**Florence – Venice:** I can only last this one more year before finances run out and the Pope overwhelms me. Help!

Dogfight



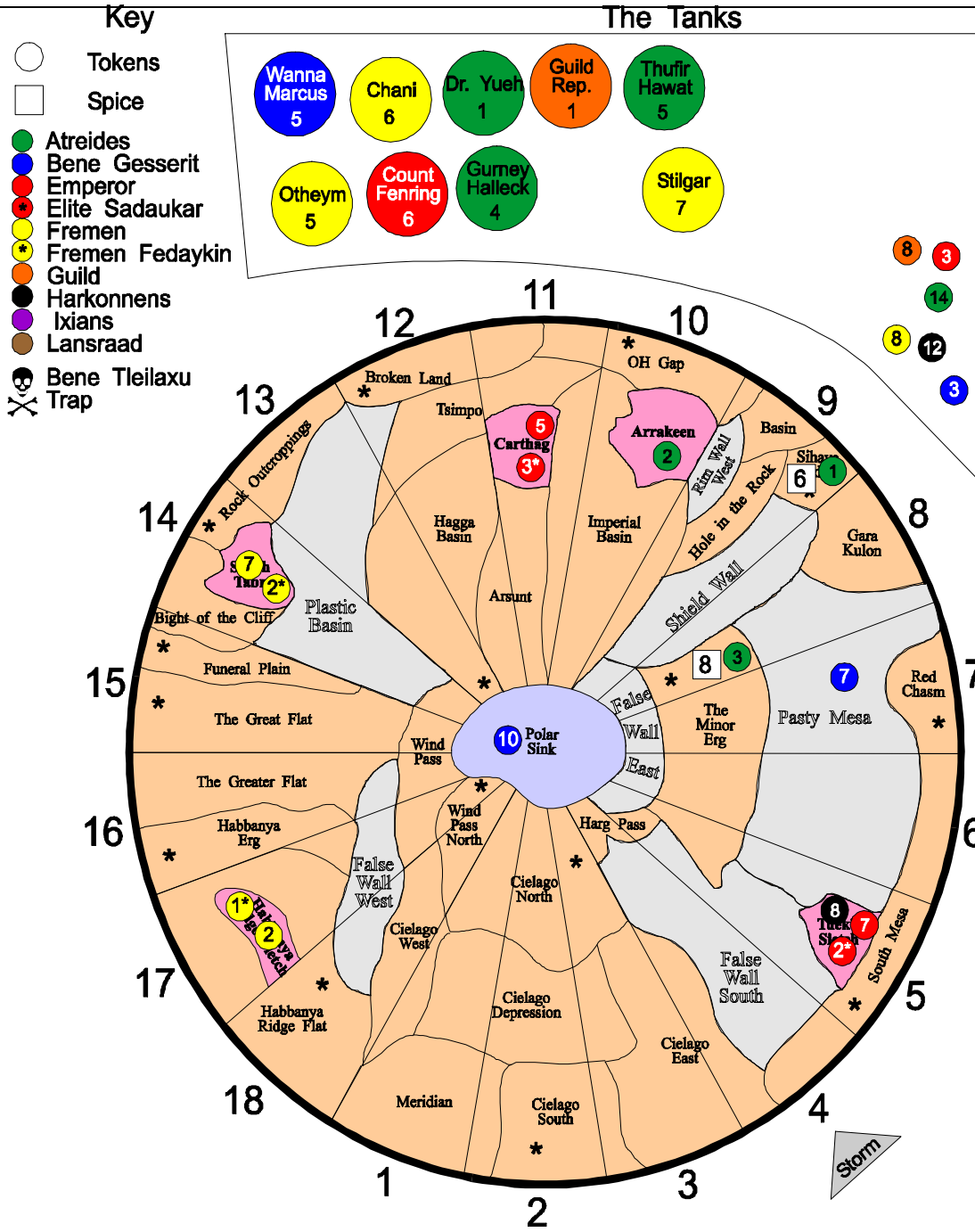
○ Army □ Fleet ◇ Garrison ◆ Autonomous Garrison ◆ Besieged Garrison

**France – Austria:** Your few Armies is attracting the Vulture's eyes to you. Get into Milan, build more Armies, and defend your borders against Venice. If Venice invades I'm in no position to help you.

**France – Venice:** The threat is not from Austria nor from I, but I suggest for you to look to the South.

**Venice – Pope:** OK, your turn to show colors, U go somewhere non threat to me, I forget u for a while.

**Venice – Others:** Fun game, but I no have time to do right press.



**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

Bidding

The Bene Tleilaxu give \_\_\_\_\_ to the Guild  
CARD 1 (\_\_\_\_\_) goes to the Fremen for 1 spice  
CARD 2 (\_\_\_\_\_) is not bid on. Bidding ends

Revival and Movement

The Bene Gesserit coexist everywhere. The Guild moves last.

Revival

**Atrides** revive 3 tokens (2 spice to the Bene Tleilaxu)

**Bene Gesserit** revive 1 token

**Emperor** revives 3 tokens (4 spice to the Bene Tleilaxu)

**Fremen** revive 3 tokens (1 Fedaykin)

**Guild** revive 3 tokens and Esmar Tuek (free), and plays the Ghola card to revive 5 more tokens

**Harkonnens** revive 3 tokens and Umman Kudu (free)

Shipping

**Atrides** ship 3 tokens to the Minor Erg (8) (6 spice to the Guild, Bene Gesserit token accompanies to the Polar Sink)

**Emperor** ships 9 tokens (2 Elite Sadaukar) to Tuek's Sietch (9 spice to the Guild, Bene Gesserit token accompanies to the Polar Sink)  
**Fremen** ship 3 tokens (1 Fedaykin) to False Wall West (17)  
**Harkonnens** ship 8 tokens to Tuek's Sietch (paid for by the Guild)  
**Guild** attempts to ship 12 tokens to Tuek's Sietch, but cannot move to the same area as an ally.

Movement

**Atreides** move 1 token Arrakeen – OH Gap – Basin – Sihaya Ridge  
**Fremen** move 3 tokens (1 Fedaykin) to Habbanya Ridge Sietch

Combat

Tuek's Sietch: Harkonnens vs. Emperor. Emperor is the aggressor (determined randomly). Available leaders: Emperor: Captain Aramsham, Burseg, Caid, Bashar. Harkonnens: All.

Positions

**Atreides:** 2 tokens Arrakeen, 1 token Sihaya Ridge, 3 tokens the Minor Erg (8), 14 tokens, Gurney Halleck, Thufir Hawat, and Dr. Yueh in the tanks. Kwisatz Haderach available.  
**Bene Gesserit:** 3 tokens and Wanna Marcus in the Tanks, 10 tokens Polar Sink, 7 tokens Pasty Mesa (7)  
**Bene Tleilaxu:** *Traps:* none  
**Emperor:** 8 tokens (3 Elite Sadaukar) Carthag, 3 tokens and Count Fenring in the Tanks, 9 tokens (2 Elite Sadaukar) Tuek's Sietch  
**Fremen:** 9 tokens (2 Fedaykin) Sietch Tabr, 3 tokens (1 Fedaykin) Habbanya Ridge Sietch, 8 tokens, Stilgar, Chani, and Othym in the tanks  
**Guild:** 12 tokens off-planet, 8 tokens and the Guild Administrator in the Tanks  
**Harkonnens:** 12 tokens in the Tanks, 8 tokens Tuek's Sietch

Your Spice: \_\_\_\_\_

Your Intrigue cards: \_\_\_\_\_

\_\_\_\_\_  
 Your traitor(s): \_\_\_\_\_

**Junk Yard Dog**

**Turn 12b**

**Deadline Turn 13a 2/14, Tuesday**

Cards

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

Dave processes an Order, gaining \$18 and 2 waste, and using 2 raw materials.  
 Andy plays Waste Disposal, reducing his waste to 4  
 Cary plays Raw Materials, auctioning off 3 raw materials. No other players bid, so he gets it for \$1.  
 Eric plays Raw Materials, auctioning off 5 raw materials. No other players bid, so he gets it for \$1.  
 Dave plays Innovation, spending \$5 and improving Rationalization to 1/15.  
 Andy plays Growth, increasing his growth to 19.  
 Cary plays Waste Removal, reducing his waste to 9, and increasing Eric's to 6, Dave's to 9, and Andy's to 5.  
 Eric plays Waste Disposal, reducing his waste to 5  
 Dave plays Hiring/Firing to reduce his workforce to 1.  
 Andy plays Innovation, spending \$5 and improving Waste Reduction to 1/15  
 Cary takes out a loan, and plays Innovation, spending \$5 and improving Waste Reduction to 3/6.  
 Eric plays Growth, increasing his growth to 18  
 Eric and Andy each spend \$4 on maintenance, Cary spends \$3, and Dave spends \$1.

The Players

Player	Play Order	Money	Loans	Raw Material Supply	Growth	Co-workers	Saved Card
Eric Brosius	3	\$39	0	10	18	4	Advisor
Dave Partridge	4	\$16	0	5	18	1	Advisor
Andy York	1	\$29	10	10	19	4	Raw Materials
Cary Nichols	2	\$4	30	7	14	3	

Player	Rationalization	Raw Materials	Waste Reduction	Waste Disposal	Victory Points
Eric Brosius	4/3	5/1	1/15	6	57
Dave Partridge	1/15	2/10	2/10	9	61
Andy York	4/3	3/6	1/15	5	48
Cary Nichols	4/3	3/6	3/6	9	1



**Republic of Texas** continues a Long Duration Manned Orbital (Crockett, Kitzman, Houston). Earth Orbital Activities (48%<97%), Earth Orbital Activities (53%<97%), Earth Orbital Activities (86%<97%), Earth De-Orbital Burn (88%<98%), Re-entry (81%<98%), Recovery (62%<98%). Mission success. +1% to i, +10MB to budget.

**Cain Program** launches a Mars Probe. Liftoff (04%<98%), Earth Orbital Burn (90%>77%). Mission failure. +1% on 5, -8MB on budget.

**Cain Program** launches a Long Duration Manned Orbital (Ventruie, Burhah, Gangrel). Liftoff (57%<98%), Earth Orbital Burn (50%<86%), Earth Orbital Activities (76%<86%), Docking (63%<98%), Earth Orbital Activities (56%<68%), Earth Orbital Activities (83%>68%), internal power loss, permanent power outage, space station is a loss, mission scrubbed, Earth De-orbital Burn (17%<86%), Re-entry (65%<86%), Recovery (86%=86%). Mission failure. +1% to c and i, -10MB to budget.

**Romulus Project** launches a Mars Probe. Liftoff (59%<97%), Earth Orbital Burn (22%<66%), Earth Mission Burn (08%<66%). Mission continues next turn. +1% to C and 5.

**Romulus Project** launches a Mars Probe. Liftoff (21%<98%), Earth Orbital Burn (32%<67%), Earth Mission Burn (83%>67%). Mission failure. +1% to 5, -8MB to budget.

**Republic of Texas** launches 17 habitation extenders. Liftoff (14%<80%), Earth Orbital Burn (54%<98%), Earth Orbital Activities (54%<98%). Mission success. +1% to H.

**Republic of Texas** launches a five person habitation module (part 1). Liftoff (17%<81%), Earth Orbital Burn (95%<98%), Earth Orbital Activities (61%<93%). Mission success. +1% to H and k.

**Republic of Texas** launches a five person habitation module (part 2). Liftoff (47%<82%), Earth Orbital Burn (60%<98%), Earth Orbital Activities (90%<94%). Mission success. +1% to H and k.

**Republic of Texas** launches a Long Duration Manned Orbital with a two person Mars lander and 5 habitation extenders (Travis). Liftoff (65%<83%), Earth Orbital Burn (34%<93%), Earth Orbital Activities (91%<93%), Docking (47%<93%), Earth Orbital Activities (90%<98%), install 5 habitation extenders, Earth Orbital Activities (63%<98%), assemble one habitation module, Earth Orbital Activities (51%<98%), install 5 habitation extenders into Mars lander. Mission continues next turn. +1% to H.

**Republic of Texas** launches a Long Duration Manned Orbital with a two person Mars lander and 5 habitation extenders (Simmons). Liftoff (85%>84%), last second countdown abort, problem resolved, countdown resumes same day, Liftoff (81%<84%), Earth Orbital Burn (50%<93%), Earth Orbital Activities (90%<93%), Docking (52%<98%), Earth Orbital Activities (49%<98%), assemble one habitation module, Earth Orbital Activities (30%<98%), installs 5 habitation extenders into second Mars lander, Earth Orbital Activities (79%<98%), links both habitation modules. Mission continues next turn. +1% to H.

**Republic of Texas** launches a Long Duration Manned Orbital with a Solar sail (Ocknaschek, Milbourn, Crockett). Liftoff (36%<98%), Earth Orbital Burn (12%<95%), Earth Orbital Activities (09%<95%), Docking (20%<98%), Earth Orbital Activities (16%<98%), attach both Mars landers to habitation modules, Earth Orbital Activities (23%<98%), install solar sail on habitation modules, Earth Orbital Activities (35%<98%), install 12 habitation extenders in space station. Mission continues next turn. Ocknaschek to 60%, Milbourn to 50%.

**Republic of Texas** launches a Manned Mars Mission (Travis, Simmons, Ocknaschek, Milbourn, Crockett) from space station. Earth Mission Burn (98%>94%), crew saves, Solar Sail Deployment (02%<95%). Mission continues next turn. +1% to K and k, +82MB to budget.

**JOE** launches a Manned Sub-Orbital (Smith, Jones). Liftoff 35%<98%), Re-entry (86%<95%), Recovery (73%<95%). Mission success. +1% to b, Smith and Jones to 10%, +2MB to budget.

**JOE** launches a three person habitation module. Liftoff (22%<92%), Earth Orbital Burn (47%<86%), Earth Orbital Activities (54%<86%). +1% to D and j.

**JOE** launches a three person habitation module. Liftoff (95%>93%), negative ignition, rocket is shut down safely, module recovered, mission failure. +1% to D.

**JOE** launches a Long Duration Manned Orbital (Manning, Rodgers). Liftoff (51%<98%), Earth Orbital Burn (93%<96%), Earth Orbital Activities (60%<96%), Docking (96%<98%), Earth Orbital Activities (43%<83%), Earth Orbital Activities (63%<83%), Earth Orbital Activities (27%<83%). Mission continues next turn. +1% to b and i.

### Players

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
Launch Facilities	3	3	4	6
Astronauts	8	7	6	9

**Astronauts: Cain Program:** Ventruie, Tremere, Brujah (70%), Gangrel (20%), Malkavian, Nosferatu (10%), Toreador, Caitiff (0%), **Romulus Project:** Brutus (60%), Augustus, Anthony (30%), Lepidus (20%), Octavian, Tiberius (10%), Caligula (0%), **JOE:** Roger Manning, Buck Rodgers, Astro (70%), Flash Gordon (50%), Smith, Jones (10%), **Republic of Texas** Travis, Bowie, Crockett, Simmons (70%), Ocknaschek (60%), Milbourn (50%), Boyle, (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): 2/77%, 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): 1/82%, One Person Capsule (a): 5/84%, Three Person Capsule (c): 1/81%, Two Person Module (d): 1/81%, Three Person Space Station (i): 0/68%, Habitation Extenders (p): 6, EVA: 98%, Photoreconnaissance: 100%, Space Construction: 55% IN ORBIT: nothing

**Romulus Project:** Orbital Satellite (1): 2/98%, Interplanetary Satellite (2): 4/72%, Lunar Probe (3): 0/65%, Docking Module (4): 2/98%, Mars Probe (5): 0/68%, One Stage Rocket (A): 0/91%, Two Stage Rocket (B): 0/89%, Three Stage Rocket (C): 0/98%, Liquid Fuel Strap-ons (D): 2/33%, Kicker (F): 1/98%, One Person Capsule (a): 3/86%, Three Person Capsule (c): 1/94%, Two Person Module (d): 0/49%, Three Person Space Station (i): 2/71%, Three Person Habitation Module (k): 2/62%,



Two Person Mars Lander (n): 1/11%, Habitation Extenders: 0, EVA: 88%, Photorecon: 100%, Space Construction: 100% IN ORBIT: 1 three person space station (life support: 30)

**JOE:** Orbital Satellite (1): 1/98%, Interplanetary Satellite (2): 0/93%, Lunar Probe (3): 0/72%, Docking Module (4): 4/98%, Mars Probe (5): 0/88%, One Stage Rocket (A): 1/98%, Two Stage Rocket (B): 6/98%, Liquid Fuel Strap-ons (D): 2/94%, Kicker (F): 0/98%, Solid Rocket Boosters (H): 3/82%, Solar Sail(K): 0/95%, Ion Engine (J): 1/48%, One Person Capsule (a): 0/92%, Two Person Capsule (b): 3/97%, One Person Module (e): 0/92%, Three Person Space Station (i): 0/84%, Three Person Habitation Module (j): 1/72%, Two Person Mars Lander (n): 1/90%, Habitation Extenders (p): 36, EVA: 98%, Hibernation: 1/80%, Photorecon: 100%, Space Construction: 55%. IN ORBIT: 1 three person space station (life support: 18), 17 habitation extenders, 1 two person Mars lander (life support: 2), 1 three person habitation module (life support: 36), 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): 0/98%, Liquid Fuel Strap-on (D): 0/85%, Kicker (F): 0/98%, Solid Rocket Booster (H): 1/85%, Solar Sail (K): 0/96%, One Person Capsule (a): 6/93%, Three Person Capsule (c): 0/98%, Two Person Module (d): 1/91%, Three Person Space Station (i): 1/98%, Five Person Habitation Module (k): 0/95%, Two Person Mars Lander (n): 2/90%, Habitation Extenders (p): 3, EVA: 98%, Photorecon: 100%, Space Construction: 100% IN ORBIT: 1 three person space station with 4 three person capsules docked (life support: 90), 1 three person space station with 2 three person capsules and 2 one person capsules docked (life support: 24), 0.5 five person habitation modules, EN ROUTE TO MARS: 2 linked five person habitation modules (total life support: 120) with 2 two person Mars lander (life support: 32, 32) and a solar sail (disassembled).

### 1977

#### Draw Event Cards

**Andy York:** Major Media Event. Astronauts one 1MB each for remainder of game (no effect). -20MB to budget.  
**Bill Scharf:** Test failure. -15% on three person habitation module. -25MB to budget.  
**Cary Nichols:** Major Media Event. Impassioned plea by national leader enhances commitment. +30MB to budget.  
**Dennis Cain:** Test failure. -15% on three person capsule program. +1MB to budget.

#### Final Positions

Player Name	Dennis Cain	Cary Nichols	Bill Scharf	Andy York
Country	Cain Program	Romulus Project	JOE	Republic of Texas
1977 Budget	145	187	258	287
Cash	314	0	6	369
1978 Budget	146	217	233	267

### Retriever

#### Turn 15

#### End of Game Statements due: 2/14 Tuesday

#### Commander Actions

**Mud Mining Corporation** opens the bidding on the a Moon Base at 205 and HBDC gets it for 206 (Or1, Or1, Or5, Wa8, Wa9, Wa9, Wa9, MWa, Ti9, Ti13, MTi, Mi16, Mi16, Mi18, Mi18). Opens the bidding on a second Moon Base at 205 and gets it (MWa, Ti8, Ti10, Ti11, Re13, Mi17, Mi18, NC18, RO35, RO45). Moves a population from a water factory to man it.

**ORION** opens the bidding on a Space Station and gets it for 142 (Re9, Re11, Re12, Re13, Re16, Mi19, OM25, RO45). Buys a research factory (MWa) and a population factor (Re13), and moves a population factor from a water factory to man the research factory.

**SD, Inc.** opens the bidding on the Outpost at 100 and gets it (Or5, MWa, MWa, HE discount, 2 Ec discounts).

**Little Green Manufacturing** buys 3 research factories (Or2, Or4, MWa, Ti8, Re9, Re13, Mi14) and 2 population factors (Wa7, Re13). Transfers a population factor from an ore factory to a research factory.

**Bartertown** opens the bidding on Robots at 50 and gets it (Or3, Wa7, Wa8, Wa9, Wa9, Re14). Buys a robot (Re10).

**Golden Orb Developers** buys 3 robots (Wa6, Wa8, Wa8, Ti8)

**HBDC** transfers a population factor from an ore factory to the Moon Base.

**ACK!** Buys a new chemicals factory (Or1, Or4, Wa6, Re15, NC14, NC20) and a robot (Re11).

#### The Players

	Outpost Name	Commander	Factories	Upgrades	VP
1	MMC	Eric Brosius	OrF, OrF, WaF, <b>WaF, WaF, WaF, TiF, TiF, NCF</b>	HE, No, Sc, 2OL, Ec, <b>PC, PC, MB</b>	76
2	ORION	Michael Lowrey	OrF, OrF, WaF, <b>WaF, WaF, WaF, ReF, ReF, ReF, ReF</b>	2DL, No, 3Sc, OL, La, <b>SS, SS, PC</b>	64
3	SD, Inc.	Andy Lewis	<b>OrF, OrF, WaF, WaF, WaF, WaF, WaF, TiF, TiF, TiF</b>	HE, No, Wa, 2Ec, OL, 3Ou	45
4	HBDC	Kevin Wilson	OrF, OrF, <b>WaF, WaF, WaF, WaF, TiF, TiF, TiF, TiF</b>	Wa, HE, OL, Ou, <b>MB</b>	42
5	LGM	Dave Partridge	OrF, OrF, <b>WaF, WaF, WaF, WaF, WaF, TiF, ReF, ReF, ReF, ReF, ReF</b>	2No, Ec, OL, La, Ou	41
6	Bartertown	Andy York	<i>OrF, OrF, WaF, WaF, WaF, WaF, WaF, ReF, ReF</i>	2DL, Wa, 2La, 2Ro, Sc, Ec	37
7	GOD	Cary Nichols	<i>OrF, OrF, WaF, WaF, WaF, WaF, TiF, TiF, ReF</i>	Wa, HE, Ec, Ro, La	27
8	ACK!	Bill Scharf	<i>OrF, OrF, WaF, WaF, NCF, NCF, NCF, NCF</i>	HE, DL, Wa, Sc, Ro	24

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

### Notes

Congratulations to Eric on his victory.

## Dogwood

### **Epoch IV T'ang Dynasty, Arabs, and Khmers Epoch V Empire Selection and Franks due: 2/14 Tuesday**

#### Epoch IV

**Marching Through the Ages** (Lewis) plays Disaster in Ganges Delta (Monument and city destroyed). T'ANG DYNASTY: Army and Capital Yangtse Kian (Han Dynasty army eliminated), Si-Kyang (vs. Guptas; T: 6, 3; G: 3, 3; wins), fleet South China Sea (vs. Retropolis; MTtA: 6, 1; R: 5; wins), army East Indies (vs. Han Dynasty; T: 4, 2; H: 2, 2; wins), Szechuan (vs. Chou Dynasty; T: 6, 5; C: 5; wins), Wei River (city eliminated), Tarim Basin (vs. Huns; T: 3, 1; H: 1; wins), Turanian Plain (vs. Huns; T: 4, 2; H: 2; wins), Persian Plateau (vs. Huns; T: 6, 2; H: 4, 2; wins), Zagros (vs. Huns; T: 6, 3; H: 3; wins, city eliminated), Hindu Kush (vs. Huns; T: 5, 4; H: 6; loses). Builds Monument Yangtse Kian. Points: Control of China (9), Dominance of Middle East (6), Presence in Southeast Asia (2), 2 Capitals (4), 5 Monuments (5), and 1 Sea (1) for 27 points.

**Turanians** (Nichols) ARABS: Army and Capital Arabian Peninsula, fleet Red Sea (vs. Arachnids; T: 4, 2; A: 1; wins), Red Sea, army Palestine (vs. Romans; A: 5, 1; R: 2; wins), Nile Delta (vs. Byzantines; A: 3, 3; B: 4; loses), Nile Delta (vs. Byzantines; A: 6, 5; B: 2; wins), Nubia (vs. Romans; A: 6, 5; R: 5; A: 5, 2; R: 3; wins), Upper Nile (vs. Nile Kingdom; A: 1, 1; N: 2+1; loses), Upper Nile (vs. Nile Kingdom; A: 5, 2; N: 1+1; wins, city eliminated), Levant (vs. Huns; A: 1, 1; H: 6; loses), Levant (vs. Huns; A: 5, 1; H: 6; loses), Levant (vs. Huns; A: 6, 2; H: 1; wins), Upper Tigris (vs. Huns; A: 3, 2; H: 3; A: 4, 3; H: 1; wins), Middle Tigris (vs. Persia; A: 4, 4; P: 5; loses), Middle Tigris (vs. Persia; A: 5, 2; P: 3; wins), Lower Tigris (city eliminated), Eastern Anatolia (vs. Persia; A: 2, 1; P: 6, 5; loses), Eastern Anatolia (vs. Persia; A: 3, 2; P: 3, 1; A: 4, 3; P: 5, 4; loses), Eastern Anatolia (vs. Persia; A: 5, 4; P: 3, 2; wins). Builds Monument Arabian Peninsula. Points: Dominance in North Africa (4) and Middle East (6), Presence in Southern Europe (3), 1 Capital (2), 1 city (1), 4 Monuments (4), and 1 Sea (1) for 21 points.

**Arachnids** (Bolduc) plays Anglo-Saxons. Army Baltic Seaboard, fleet North Sea, army Ireland. Plays Civil War in Ganges Delta (vs. Sassanids; C: 3, 2; S: 1; wins), Lower Indus (vs. Sassanids; C: 5, 2; S: 4; wins), and Persian Salt Desert (vs. Sassanids; C: 6, 6; S: 3; C: 6, 6; S: 4; wins). **KHMERS**: Army and Capital Mekong (Gupta army destroyed), fleet South China Sea (vs. Marching Through the Ages; A: 6, 4; MTtA: 3; wins), army Si-Kyang (vs. T'ang Dynasty; K: 4, 1; T: 4; K: 6, 1; T: 3; wins), Malayan Peninsula (vs. Malayan Kingdom; K: 4, 3; M: 4+1; loses), Chekiang (vs. Hsuing-nu; K: 2, 2; H: 6; loses). Points: Presence in North Africa (2), Middle East (3), China (3), India (3), Northern Europe (2), and Southeast Asia (2), 1 Capital (2), 1 city (1), 2 Monuments (2), and 3 Seas (3) for 23 points.

#### Players

Player Name	Player Faction Name/Color	Empire Strength Points	Victory Points
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
Andy Lewis	Marching Through the Ages (green)	37	84
Paul Bolduc	Arachnids (blue)	41	69
Cary Nichols	Turanians (black)	46	47

#### Positions

**Turanians**: Two fleets Red Sea. **MACEDONIA**: Army and city Crete, two armies Pyrenees, armies Central Massif, Western Iberia. **ARABS**: Army, Capital, and Monument Arabian Peninsula, army and Monument Nile Delta, Levant, Upper Tigris, armies Palestine, Nubia, Upper Nile, Middle Tigris, Lower Tigris, Eastern Anatolia.

**The Horde**: **CELTS**: Armies Northern Gaul, Albion. **MALAYAN KINGDOM**: Army, city, and fort Malayan Peninsula. **HUNS**: Army and Monument Upper Indus, armies Hindu Kush, Western Steppe, Dniepr

**Marching through the Ages**: **NORTH AMERICAN MIGRANTS**: Army West Indies. **MAYANS**: Army and Capital Central America, army Guyana Highlands. **HSUING-NU**: Army and Monument Chekiang, armies Mongolia, Yellow River, Great Plain of China. **T'ANG DYNASTY**: Army, Capital, and Monument Yangtse Kian, army and Monument Tarim Basin, Persian Plateau, Zagros, armies Wei River, Szechuan, East Indies, Turanian Plain

**Retropolis**: Fleets Black Sea, Eastern Mediterranean. **CHOU DYNASTY**: Two armies Irrawaddy. **IBERIAN KINGDOM**: Army, city, and fort Southern Iberia. **HAN DYNASTY**: Army Eastern Steppe. **BYZANTINES**: Army and Capital Balkans, armies Danubia, Western Anatolia, Dalmatia, Pindus, Morea.

**Royal Manticoran Historical Society**: Fleet Bay of Bengal. **ASSYRIA**: Two armies Western Deccan. **SASSANIDS**: Army Ganges Valley. **GUPTAS**: Army and city Eastern Deccan, two armies Sumatra, army Eastern Ghats.

**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, North Sea, South China Sea. **SUB-SAHARAN MIGRANTS**: Armies Central Africa and Congo Basin. **ROMANS**: Army, city, and Monument Shatts Plateau, army Libya. **ANGLO-SAXONS**: Armies Baltic Seaboard, Ireland. **CIVIL WAR**: Army and Monument Lower Indus, armies Persian Salt Desert, Ganges Delta. **KHMERS**: Army and Capital Mekong, army Si-Kyang.

**Salty Dog**

**Seafarers of Catan**

**Turns 4.4 to 5.4**

**Deadline Turns 5.5 to 6.5 2/14, Tuesday**

Turn 4

**Bill** rolls a 5. Dave and Chris each receive a lumber, Cary and Ward each receive a brick, and Bill receives a wool. Bill trades 2 ore for 1 wool at the ore port, and builds ships from D19 – E19 (discovers ocean), E19 – E18 (discovers Forest 11, gains lumber), and E18 – F18 (discovers ocean). Takes the longest trade route from Ward.

**Chris** rolls a 7. He moves the Robber to the Hills 6, stealing a brick from Dave. Builds a settlement at B13.

**Ward** rolls a 11. Chris and Cary each receive an ore. Passes.

Turn 5

**Kevin** rolls a 7. Moves the Pirate to the sea area south of G13 and steals a lumber from Dave. Builds a ship from G9 – G8 (discovers Forest 9, gains lumber).

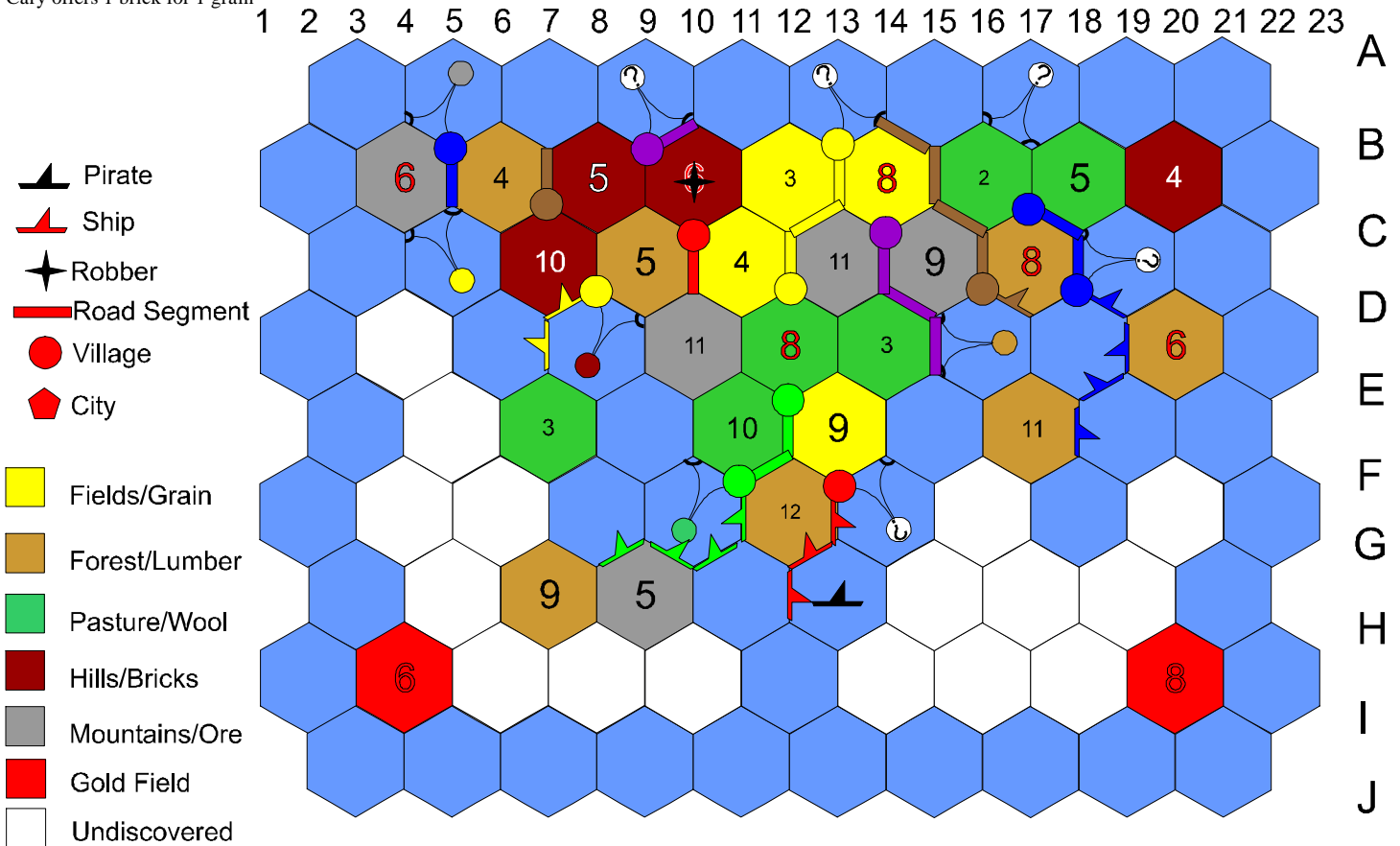
**Cary** rolls an 5. Dave and Chris each receive a lumber, Cary and Ward each receive a brick, and Bill receives a wool. Passes.

**Dave** rolls a 9. Kevin and Dave each receive a wheat, Cary and Bill each receive an ore. Trades 3 brick for one wool.

Bill rolls a 10. Kevin receives 2 wool, Chris and Ward each receive 1 brick. Passes.

Open Trades

Cary offers 1 brick for 1 grain



Turn 5 Rolls

Chris 8                      Ward 8

Turn 4 Rolls

Kevin 7                      Dave 4                      Cary 9                      Bill 7

Chris 5

The Players

Player	Color	Grain	Wool	Lumber	Brick	Ore	Development Cards	VP
Kevin Wilson	Green	1	3	1	2	1		2
Dave Partridge	Red	2	1		1			2
Cary Nichols	Purple	1		3		2		2
Bill Scharf	Blue				1	3		5*
Chris Geggus	Yellow	1	2	1	1	1		3
Ward Narhi	Brown		2	3				2

\* Longest trade route

**Dog Chow****Age of Renaissance****Initial Token Purchase and Turn 1, Phase 1  
Deadline Turn 1 Phases 2 and 3 2/14, Tuesday**Initial Token Purchase

Barcelona buys 14 tokens.

Hamburg buys 24 tokens.

London buys 11 tokens

Venice buys 17 tokens

Genoa buys 17 tokens

Paris buys 17 tokens

Turn 1, Phase 1: Card Draw

Your card was:

The Players

Player	Country	Misery	Tokens	Money	Order	Dominance	Ships	Advances
Paul Bolduc	Barcelona	0	14	\$23	2	1		
Cary Nichols	Hamburg	0	24	\$13	6	1		
Bob Robles	London	0	11	\$27	1	1		
Dennis Cain	Venice	0	17	\$22	5	1		
Steve Koehler	Genoa	0	17	\$23	4	1		
Michael Longdin	Paris	0	17	\$23	3	1		

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****Initial Influence Allocation  
Deadline Turn 1, Cure through Health 2/14, Tuesday**Initial Influence Allocation

Your influence allocation:

Influence Declaration

TCC immediately declares 2 IP on Strychnin and 1 IP on Satin.

Politburo

Office	Policitian	Condition	Influence
Party Chief	Nestor Aparatschik (A)	80 +	
KGB Head	Antonj Talksalott (J)	67	
Foreign Minister	Mikhail Strychnin (T)	57	2 (TCC)
Defense Minister	Iwan Manjak (P)	61	
Ideology Minister	Igor Doberman (L)	65	
Industry Minister	Boris Badenuff (X)	53	
Economy Minister	Oleg Satin (O)	62	1 (TCC)
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	Lysenko Evolutionists
Bill Scharf	Trotskyite Internationalists
Dennis Cain	Russian Olympic Drinking Team (RODT)
Bob Robles	Byelorussians Against Much Byzantine Interference (BAMBI)
Mike Scott	The California Connection
Michael Longdin	Hard Line Stalinists

Pedagoguery

Disks are everywhere in the universe. From tiny systems like the rings of the outer planets to huge spiral galaxies, disks are everywhere you look. In addition, they often exhibit some spectacular effects. Where do they come from and how do they produce these effects? Many of the answers are still being discovered, but some interesting theories exist.

In general, disk formation is a consequence of the conservation of angular momentum. Consider a large cloud of gas. It is likely that it will have some overall rotation, no matter how small. If that cloud starts to contract under its gravitation, then as it gets smaller overall, it rotates faster in the same way that an ice skater spins faster as she pulls in her arms. However, as the roughly spherical cloud contracts, gas that falls in parallel to the rotational axis will fall faster than gas along the "equator" of the sphere, for the simple reason that the rotational velocity of the gas will prevent it from falling. Eventually, the gas will all collect into a single plain, resulting in a disk. This is why, for example, the planets all lie within roughly the same plain – they formed from a disk of gas that was left over from the formation of the sun.

While conservation of angular momentum does explain why disks are so ubiquitous in the universe, it does not explain some of the exotic physics that takes place in accretion disks around compact objects like neutron stars and black holes. In these cases, the disk heats up, often hot enough to emit x-rays, and it will frequently emit jets of matter traveling at relativistic speeds along the axis of rotation. In some cases, these jets can travel thousands of light-years from their origin. How do these affects arise? The answer appears to be turbulence. But what causes the turbulence?

Turbulence comes from friction. But what could cause friction in space? One source of the friction could be heat generated when particles within the disk collide with each other. This is a mechanism that operates within Saturn's rings: as various rocks and pebbles within the rings collide, they exchange energy and angular momentum. Some of the energy is lost as heat, so the angular

momentum on average is transferred outwards, causing individual particles to spiral inwards. In an environment around a neutron star or black hole, this effect would be much more intense, because the greater gravity of those objects would mean that collisions would take place at higher speeds, and would therefore be much more energetic. In fact, they would be so energetic, that they would frequently ionize the material. And when the material is ionized, a new major factor comes into play: the electromagnetic force.

Up to this point, we were dealing primarily with gravitational forces. The electromagnetic force is tremendously more powerful, but it only operates on charged particles. When a material becomes ionized, it becomes a collection of charged particles.

Electromagnetic effects would amplify the transfer of angular momentum outwards, because the interactions between particles would no longer be limited to physical collisions – instead they would include electromagnetic interaction. As a result, more heat would be generated and material would spiral inwards much faster. Furthermore, a fast moving charged medium would generate a strong magnetic field. This, plus the intense heat near the center of the disk, could explain the jets that are observed in many disks. The jets would also serve to take away even more angular momentum, allowing the accretion process to proceed even faster. In fact, it is now believed that jets are critical in allowing star formation, since they are frequently observed around very young pre-stellar objects called Herbig-Haro objects. The jets could take away enough angular momentum to allow the central protostar to acquire enough mass to start the central fusion process.

There are still many aspects of disks that are not understood, not the least of which is the exact process by which jets arise, but with better computer modeling, our understanding is growing.

Next issue, I will talk about anomalous x-ray pulsars.

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		Brad Martin 2/14 Joseph Street Maylands 6051 Western Australia Australia Westfront@hotmail.com	Bob Robles "Howler" 67 Tara Rd. Orinda, CA 94563 Rlrobles5@cs.com (510) 254-6354	

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

None this issue