Abbreviated *Architect of Worlds* for *Traveller*

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First Draft

Version 1.1 (27 April 2021)

Table of Contents

Introduction

This document provides an alternative world-design sequence for the tabletop roleplaying game *Traveller*. The objective is to define a sequence that:

- Uses mechanisms similar to those found in *Classic Traveller*;
- Is not significantly more complex or time-consuming;
- Avoids the more implausible results of those rules; *and*
- Is compatible with the full *Architect of Worlds* design sequence.

Architect of Worlds is a book currently under development, projected to be released in late 2021 or sometime in 2022. It is intended to be a state-of-the-art system for developing star maps and planetary systems for interstellar science fiction, intended for both literary and tabletop-game use. The home page for the project is:

https://wordpress.sharrukinspalace.com/architect-of-worlds/

The first alpha release documents (version 0.1 alpha) for *Architect of Worlds* are available from that page. More recent alpha-release updates are being provided to my patrons on roughly a monthly basis, as development continues. As of 16 April 2021, the current version of the system is 0.5 alpha. To gain access to the most recent updates, consider signing up as a patron at:

https://www.patreon.com/Sharrukin

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Feel free to contact me at JFZeigler@aol.com or visit my website at wordpress.sharrukinspalace.com if you have any questions.

Change Log

This page should serve as a summary of changes to the *Abbreviated Architect of Worlds for Traveller* document since version 1.0 (16 April 2021).

Changes in Version 1.1

- Correction to the Copyright Statement, permitting sharing and redistribution without written permission from the author.
- Correction to the entry on the World Properties Table for world size A and Temperate climate.
- Modifier to the roll for the primary star type based on Population has been removed. The modifier now depends only on the main world's Atmosphere.

Simplifying Assumptions

- All planetary systems are old enough to permit photosynthetic life to evolve on their Temperate worlds.
- All planetary systems have metallicity roughly equal to that of Sol.
- All worlds have average density (and therefore average mass) for their radius.
- All worlds have been enriched with water, possibly due to the presence of a gas giant redistributing ice asteroids and comets during planetary formation.
- Worlds outside the planetary system's "ice line" are assumed to be icy.
- If a world has an active carbonate-silicate cycle under way, then it has photosynthetic life and there will be significant free oxygen in the atmosphere. (This is by far the biggest simplifying assumption in the list.)
- All worlds in a given band of orbital radii are assumed to have the same blackbody temperature.

Design Sequence

To design the main world and system features for a hex on the *Traveller* map, proceed through the following steps.

Size

The main world's Size characteristic is determined by rolling 2D-2, as in *Classic Traveller*.

Blackbody Temperature

The main world's *blackbody temperature* is not part of the UWP, but it has significant effect on surface conditions. It can also be used in the full *Architect of* Worlds design sequence to help determine the placement of the world within the planetary system. We will determine the main world's blackbody temperature as being within one of several ranges. Blackbody temperature will be measured in *kelvins* (K).

To determine the blackbody temperature, roll 2D on the following table and make note of the keyword in the Description:

Blackbody Temperature Table

Roll (2D)	Typical Blackbody Temperature	Description
2	330 K or more	**Hot** – Any surface water has long since been lost, possibly triggering a runaway greenhouse. Examples: Mercury and Venus.
3-8	280 K	**Temperate** – Liquid surface water is possible and even likely. "Garden" worlds will usually fall in this range. Examples: Earth.
9	220 K	**Cold** – Too cold for liquid surface water, although there may be water ice or subsurface aquifers. Examples: Mars.
10	160 K	**Frozen (I)** – Approaching the system's "ice line." Far too cold for liquid surface water. Examples: Ceres.
11	120 K	**Frozen (II)** – Past the "ice line." The largest gas giant and its satellites are often found here. Worlds often have thick coats of water ice. Examples: Europa or Ganymede.
12	90 K or less	**Frozen (III)** – The outer reaches of the planetary system. More gas giant worlds and their major satellites are found here, along with the "minor planets" of the Kuiper Belt. Worlds are likely to have thick coats of water and other ices. Examples: Titan.

Atmosphere and Hydrographics

Cross-reference the main world's Size with the keyword for its blackbody temperature in the World Properties table on the next page. The Atmosphere and Hydrographics characteristics may be fixed by those parameters. In many cases, there will be more than one possibility for the Atmosphere – roll 2D and check the result against the listed options.

To translate from the Atmosphere keywords to *Traveller* UWP codes: None – 0, Trace – 1, Exotic – A, Corrosive – B, Unusual – F.

If the atmosphere is *Breathable*, its density will be determined by a roll of 1D. Add +1 to the roll for world Size 9, or +4 to the roll for world Size A, and check the following table. The atmosphere's Tainted status is determined by a second roll of 1D: the atmosphere is Clear on a 1-3 and Tainted on a 4-6 on this roll.

Breathable Atmospheres Table			
		Atmosphere Digit	
Roll (1D)	**Density**	**Clear**	**Tainted**
1	Very Thin	3	2
2	Thin	5	4
3-4	Standard	6	7
5-6	Dense	8	9
7 or higher	Very Dense	D	D

Hydrographics will often depend on the result for Atmosphere and may be set by a modified 1D roll, as described in the World Properties Table.

Specific atmosphere and hydrographics notes:

- Trace atmospheres are almost always dominated by carbon dioxide.
- All atmospheres for Size 9 or Size A worlds are likely to retain a significant amount of primordial helium.
- *Hot Worlds:* Exotic atmospheres are usually dominated by nitrogen and carbon dioxide. Corrosive atmospheres are super-dense carbon dioxide at extremely high temperatures (Venus-class).
- *Temperate Worlds:* Breathable atmospheres are nitrogen-oxygen mixes created by active photosynthesis. Exotic atmospheres are mixes of nitrogen, methane, and carbon dioxide. The Unusual atmosphere for Size A worlds is "panthalassic," a very dense blanket of air over a world-ocean that is tens or even hundreds of kilometers deep. Hydrographics for Temperate worlds are almost invariably liquid-water oceans.
- *Cold Worlds:* Exotic atmospheres are mixes of nitrogen, methane, and carbon dioxide. Corrosive atmospheres also contain a significant amount of ammonia. Hydrographics may represent small, isolated liquid-water seas, or they may indicate a *eutectic* mixture of ammonia and water with a low freezing point. Cold worlds often have large expanses of water ice.
- *Frozen Worlds:* Exotic atmospheres are usually dominated by nitrogen, possibly with traces of methane or complex hydrocarbons in the mix. Frozen worlds are often covered by thick layers of water ice. Hydrographics usually represent small surface lakes of liquid hydrocarbons.

World Properties Table						
	Blackbody Temperature Keyword					
World Size	**Hot**	**Temperate**	**Cold**	**Frozen (I)**	**Frozen (II)**	**Frozen (III)**
0-2	*Atmosphere:* None *Hydrographics:* None	*Atmosphere:* None *Hydrographics:* None	*Atmosphere:* None *Hydrographics:* None	*Atmosphere:* None *Hydrographics:* None	*Atmosphere:* None *Hydrographics:* None	*Atmosphere:* None *Hydrographics:* None
3	*Atmosphere:* None *Hydrographics:* None	*Atmosphere:* None *Hydrographics:* None	*Atmosphere:* None *Hydrographics:* None	*Atmosphere:* None *Hydrographics:* None	*Atmosphere:* None *Hydrographics:* None	*Atmosphere:* None (2-7) Exotic (8-12) *Hydrographics:* 1D-4 if Exotic
4	*Atmosphere:* Trace *Hydrographics:* None	*Atmosphere:* Trace *Hydrographics:* None	*Atmosphere:* Trace (2-5) Exotic (6-9) Corrosive (10-12) *Hydrographics:* 1D-4 if Exotic or Corrosive	*Atmosphere:* None (2-6) Exotic (7-12) *Hydrographics:* 1D-4 if Exotic	*Atmosphere:* None (2) Exotic (3-12) *Hydrographics:* 1D-4 if Exotic	*Atmosphere:* None (2) Exotic (3-12) *Hydrographics:* 1D-4 if Exotic
5	*Atmosphere:* Trace (2-5) Exotic (6-12) *Hydrographics:* None	*Atmosphere:* Trace (2-5) Breathable (6) Exotic (7-12) *Hydrographics:* 1D if Breathable	*Atmosphere:* Trace (2-5) Exotic (6-9) Corrosive (10-12) *Hydrographics:* 1D-4 if Exotic or Corrosive	*Atmosphere:* None (2-5) Exotic (6-12) *Hydrographics:* 1D-4 if Exotic	*Atmosphere:* Exotic *Hydrographics:* 1D-4	*Atmosphere:* Exotic *Hydrographics:* 1D-4
6	*Atmosphere:* Exotic (2-6) Corrosive (7-12) *Hydrographics:* None	*Atmosphere:* Trace (2) Breathable (3-8) Exotic (9-12) *Hydrographics:* 1D if Breathable	*Atmosphere:* Trace (2) Exotic (3-9) Corrosive (10-12) *Hydrographics:* 1D-4 if Exotic or Corrosive	*Atmosphere:* None (2) Exotic (3-12) *Hydrographics:* 1D-4 if Exotic	*Atmosphere:* Exotic *Hydrographics:* 1D-4	*Atmosphere:* Exotic *Hydrographics:* 1D-4
7	*Atmosphere:* Exotic (2) Corrosive (3-12) *Hydrographics:* None	*Atmosphere:* Trace (2) Breathable (3-11) Exotic (12) *Hydrographics:* 1D+2 if Breathable	*Atmosphere:* Trace (2) Exotic (3-9) Corrosive (10-12) *Hydrographics:* 1D-4 if Exotic or Corrosive	*Atmosphere* None (2) Exotic (3-12) *Hydrographics:* 1D-4 if Exotic	*Atmosphere:* Exotic *Hydrographics:* 1D-4	*Atmosphere:* Exotic *Hydrographics:* 1D-4
8	*Atmosphere:* Corrosive *Hydrographics:* None	*Atmosphere:* Trace (2) Breathable (3-12) *Hydrographics:* 1D+3 if Breathable	*Atmosphere:* Trace (2) Exotic (3-9) Corrosive (10-12) *Hydrographics:* 1D-4 if Exotic or Corrosive	*Atmosphere:* None (2) Exotic (3-12) *Hydrographics:* 1D-4 if Exotic	*Atmosphere:* Exotic *Hydrographics:* 1D-4	*Atmosphere:* Exotic *Hydrographics:* 1D-4
9	*Atmosphere:* Corrosive *Hydrographics:* None	*Atmosphere:* Breathable *Hydrographics:* 1D+4	*Atmosphere:* Exotic (2-8) Corrosive (9-12) *Hydrographics:* 1D-4	*Atmosphere:* Exotic *Hydrographics:* 1D-4	*Atmosphere:* Exotic *Hydrographics:* 1D-4	*Atmosphere:* Exotic *Hydrographics:* 1D-4
A	*Atmosphere:* Corrosive *Hydrographics:* None	*Atmosphere:* Breathable (2-11) Unusual (12) *Hydrographics:* 1D+4 if Breathable, A if Unusual	*Atmosphere:* Exotic (2-8) Corrosive (9-12) *Hydrographics:* 1D-4	*Atmosphere:* Exotic *Hydrographics:* 1D-4	*Atmosphere:* Exotic *Hydrographics:* 1D-4	*Atmosphere:* Exotic *Hydrographics:* 1D-4

Settlement Data

Generate the world's Starport, Population, Government Type, Law Level, and Tech Level Characteristics, and the Population Multiplier, using standard *Traveller* rules or any other procedure you prefer.

System Features

To determine the overall features of the star system, use the System Features Table:

System Features Table					
Modified Roll (2D)	**Multiplicity**	**Classification**	**Unusual Stars**	**Gas Giants**	**Planetoid Belts**
2 or less	Single	Unusual	K0-K2 III	0	0
3	Single	F5-F9 V	K3-K5 III	0	0
4	Single	G0-G4 V	K6-K9 III	0	0
5	Single	G5-G9 V	M0-M4 III	0	0
6	Single	K0-K4 V	F5-F9 IV	1	0
7	Single	K5-K9 V	G0-G4 IV	1	0
8	Binary	M0-M1 V	G5-G9 IV	2	1
9	Binary	M2-M3 V	K0-K3 IV	2	1
10	Binary	M4-M5 V	A0-A4 V	3	1
11	Binary	M6-M7 V	A5-A9 V	4	1
12 or more	Trinary	M8 V	F0-F4 V	5	2

Multiplicity: Roll unmodified 2D on the Multiplicity column to determine the multiplicity of the star system. The main world is assumed to be associated with the primary star.

Primary Star Classification: If the main world has Atmosphere 4-9, roll 1D+2 on the Classification column. Otherwise roll unmodified 2D. Select a spectral type at random from the range given. If the result is *Unusual*, roll unmodified 2D on the Unusual Stars column and apply that result.

Companion Stars Classification: For each companion star, roll 1D-1 and add the modified roll for the primary star's classification. For the second companion in a trinary star system, roll 1D-1 and add the modified roll for the *first companion's* classification.

Gas Giants: Roll 2D on the Gas Giants column. *Modifiers:* +2 if the main world has Atmosphere 4-9, -2 if the star system is binary or trinary, -2 if the primary star's spectral type is M0 V through M3 V, -4 if the primary star's spectral type is M4 through M7 V, -6 if the primary star's spectral type is M8 V.

Planetoid Belts: Roll 2D on the Planetoid Belts column. *Modifiers:* -2 if the main world is an Asteroid Belt, -2 if the star system is single and there is no more than one Gas Giant.