

Appendix R&D – Research & Development Example

The Dynamics of Research

Position Cheapo Dynamics – consistently rated by Alsos Magazine as the ‘Cheesiest Better Mousetrap Operation in the Galaxy’ – decides to engage in Industrial Research (i.e. the position chose Industry as the Research Area for the attempt, see Research Areas and Research Action, 2 Technology, pp. 701-702). The Technology Power is activated for the purposes of Basic Research (see Technopower, 1 Technology, p. 689), and actions are submitted to the Concierge indicating that 10 RPs have been committed to the research (see Black Hole, 2 Technology, p. 703). Cheapo does not assign any Enlightenment, ‘cause, you know...

The first die roll is to determine if the research is overfunded or underfunded (see Schrödinger’s Cat, 2 Technology, p. 702). Since Cheapo put up 10 RPs for the Research, 10 RPs is divided by 3, with fractions rounded down, the result is three. Therefore, if the die roll (on one ten sided die) is three or less, the research is overfunded. If the die roll is between four and ten, the research is underfunded. *Id.*

The die roll is five, indicating that the research was underfunded. The second die roll, on one ten sided die x 5%, is to indicate by how much the research was underfunded. The result of the second die roll is a 4, indicating that the research was underfunded by 20%. *Id.*

The results of the second die roll then modify the base chance of successful research, reducing it by 20% (because of the underfunding). The adjusted base chance of success is 30% and a final die roll is made to determine the success or failure of the Research. The final die roll must be 30% or less for the research to be successful. See Cure for the Common Cold, 2 Technology, p. 703.

The final die roll, on two ten sided dice, is 45% so the Research failed and no Research Piece is received. *Id.* The final step is to determine the resources expended during the research. Since 10 RPs were committed and the research was determined to have been underfunded by 20%, 12 RPs are removed from the position’s Treasury. See Big Money, 2 Technology, p. 704. Cheapo Dynamics spent 12 RPs and received nothing.¹

Note that by committing only 10 RPs of resources to the Research, Cheapo Dynamics limited their maximum cost (“exposure”) to 15 RPs, since the maximum underfunding percentage is 50%. However, the chance that the research would be underfunded was significant, and that in turn, meant a greatly reduced chance of success of the research because of the adjustment to the base chance, and a greater chance of paying 10 or more RPs for an unsuccessful research result. Conversely, on a couple of good die rolls, had the research been determined to have been overfunded by 50% and had it been successful too, Cheapo Dynamics would have obtained a Research Piece for 5 RPs.

¹ I often find myself wondering how many millions of dollars or man-hours Microsoft spent developing their Word program? I find myself wondering this because as I have worked through GGDM, I have discovered an annoying bunch of bugs and things that don’t work right in MS Word – often arbitrarily or inconsistently. Whatever staggering amount Microsoft spent in developing MS Word, it still doesn’t work right after three decades. I only trust MS Word to screw it up. This is what research is like in GGDM.

Had Cheapo Dynamics committed 20 RPs to the research, they would have had a 60% chance that the research would be overfunded (by 10 to 50%), and a 40% chance that it would have been underfunded (by 10 to 50%). Their chance of successful research would have been greater (but not guaranteed), but their exposure would have been a minimum of 10 RPs (had the research been determined to have been overfunded by 50%) and a maximum of 30 RPs (had the research been determined to be underfunded by 50%). Although they would have a lesser chance of ‘wasting’ their resources, there still exists a significant chance that Cheapo Dynamics could ultimately have spent 30 RPs for nothing.

“It reminds me of one of my husband’s favorite sayings: ‘All your problems have one thing in common: you.’”

– Jan Dunlap, [Saved by Gracie](#) (2014)

Development Hell²

After a Type 5 time ripple event (caused by industrial attempts to invent things before they were invented, but no one will likely remember), Cheapo Dynamics became Development Hell Productions, Inc. Having finally obtained an undisrupted Industrial Research Group on the Public Space, Development Hell attempts to Develop it into an Application on the 1st Era Matrix by activation of the Technology Power for the purpose of Development (see 2 Technology, p. 707).

Development Hell specifies three locations on the 1st Era Matrix which are still open (i.e. unoccupied) and the cost is 3 RPs from the Treasury, which is the current Era times the number of locations specified (see Development Fund, 2 Technology, p. 707). Development is thus, much cheaper than Research, but there are other hazards.

All three target spaces on the Matrix are adjacent to one Application only – essentially, Development Hell is attempting to add an Industry Application to the end of a line of Applications in preparation for a potential Patent Prosecution. The base chance of Development is 50% plus 5% for each adjacent Application, so the base chance is 55%. Development Hell does not assign any Enlightenment to the attempt and the die roll result is 65%, which is a failure – the roll needed to be 55% or less. See Short One Wingnut, 2 Technology, p. 708. The location on the Matrix that was tried in the Development Attempt is now permanently blocked for that Research Group type only.

On the next Regular Turn, the Development attempts continue *automatically* – no further activation of the Technology Power is required, as long as there are open untried spaces or the Research Group has not become disrupted, see The Kitty Incident, 2 Technology, p. 708. Because there is no new Power Activation, there is no opportunity then to assign Enlightenment.

On the second turn development attempt, the die roll is 79%, another failure (you saw that coming, right?) and the second of three spaces is blocked out for all future attempts by any Industry Research Group. See The Kitty Incident, 2 Technology, p. 708.

² “Development Hell” is a film-industry term for a potential, promising, intriguing movie idea that is stuck in development, often times being continuously re-scripted, re-cast, kicked around from one producer or director to another, or languishing for years without progress toward the end-goal.

Alternate Universe #1:

The third location designated was in the meantime, taken by another Research Group that Developed into an application at that location, and thus, the ongoing Industry Application Development attempt automatically fails on the third Regular Turn. Or alternately to the alternately, something happened that caused the Industry Research Group to become disrupted, thus ending the Development attempt. See *The Kitty Incident, 2 Technology*, p. 708.

- ✓ “If it weren’t for bad luck, I’d have no luck at all.” – Buck Owens & Roy Clark, “Gloom, Despair & Agony on Me,” Hee-Haw television show, 1969.

It is possible that multiple Development attempts may be concurrently ongoing directed to the same open Matrix location and with the risk that when one is successful, the others will automatically fail. If the Application that filled the last location was from another Industry Research Group, then Development Hell obtained the desired result; however, if the new Application belongs to another Research Area (e.g., Defense, Stardrive, etc.) then Development Hell may have stepped on its own toes or the player group changed their mind and allowed the ongoing Industry Application Development to fail.

Alternate Universe #2:

How can we fail a third time? On the third turn of continuing Development Attempts – for the last unblocked location, the die roll is 91%, a third failure. At that point, having exhausted all of the designated Matrix locations, the Development attempts cease. The last remaining designated space is permanently blocked from becoming an Industry Application.

Ripples:

The result of this failure (either one) is that the Industry Research Group remains on the Public Space, continuing to occupy two Monads next to a colony. That may or may not be important depending on whether those Monads are needed for something else. The Research Group could become disrupted or could be lost in some situations but there is no provision to remove it voluntarily, other than Development into an Application, see *The Better Mousetrap, 2 Technology*, p. 709.

Further attempts may be made to Develop it into an Industry Application at unblocked, open locations on the Matrix, costing additional Technology Power Activations and some RPs. If all remaining locations become blocked to Industry Applications, the Research Group will remain on the Public Space until it can be Developed in the next Era Matrix (see *The Kitty Incident, 2 Technology*, p. 708).