

Ubiquitous Obliquity

#8

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- A New Way to Handle Huge Damage in GURPS

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Forewarned

I'm happy to see AotA being resurrected! I hope that it manages to survive in its new format.

It has been so very long since anything was written for issue #42 that I hope you will all forgive me if I forgo MC's this time around. Indeed, my article in that issue is very long in the tooth. Not only was there the year-long (or whatever it was) delay between the submission deadline and the mailing of AotA 42, that version of *Ubiquitous Obliquity* had been originally been written for AotA 41, but was dropped out of #41 by accident. More than two years have elapsed since I originally tried to get that article printed in AotA. . . . In the mean time, I've changed my thinking about the best way to model fiends in GURPS. Rather than load them up with expensive Knacks, I follow the *GURPS Spirits* method of assigning an "intrinsic-magic only" Magery and normal spells to the creatures. This leads to more reasonable point costs than do Knacks.

Life has changed an awful lot since my last submission. A year ago, I moved from California to Nashville, TN, where I am now an Assistant Professor of Physics and Astronomy (long title) at Vanderbilt University. I therefore am no longer a part of a GURPS gaming group in Berkeley, but a couple of months ago here in Nashville I finally started some face to face gaming with a couple of players here— and, yes, I'm running *GURPS Planescape*.

I've also changed my way of putting my zine together. Previously I'd used PageStream, a rather nice DTP program on my Amiga. I finally sold off my last Amiga a couple of months ago, and am now writing the zine in L^AT_EX on my Linux box. L^AT_EX is a whole lot nicer than anything else for a lot of things, but doesn't have the same flexibility of layout as does a "real" DTP program. This issue has few illustrations, and I've given up on the now-obsolete sidebar format, so it doesn't make much difference. We'll see how well I can coax various layout tricks out of L^AT_EX. One of these years I may also try writing the thing in OpenOffice.org (which would give me greater flexibility for image and sidebar or "inset text box" placement), but the truth is I'm just more comfortable with L^AT_EX for normal typesetting. (And I'd much rather edit text in Emacs than in a WYSIWYG word processor.)

Boilerplate

Ubiquitous Obliquity is produced using L^AT_EX and GNU Emacs on a 550MHz PIII RedHat 7.3 Linux box, with some assistance from the Gimp, OpenOffice.org, and other standard Linux software. Republication requires permission of the author. You are free to use the information herein for any other purpose, including distributing copies to friends, without restriction; however, if you find any of it of use, I would like to hear about it!

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(Gratuitous Narcissism)

A New Way to Handle Huge Damage in GURPS

Introduction

GURPS combat works very well for fantasy games and even modern-day games (if you stay away from high explosives). It's a realistic system, but weapon damages values and armor protection (DR) are balanced well enough against the number of hit points a character has that while combat can be mercurial and lethal, you aren't going to be killed by the smallest whim of statistics. Even if you do take an unlucky hit, and fail your HT roll to remain conscious, you don't die instantly; if your companions make it through the combat, they have a hope of resuscitating you.

Unfortunately, this breaks down as you get to higher tech levels. Ultra-tech beam weapons and explosives do huge amounts of damage; to counter them, ultra-tech armor has huge DR values. A small mismatch in balance between armor and weapon strengths can be fatal. At TL3, if you wear leather armor instead of plate mail, you may take a handful of extra points of damage—serious, to be sure, but not instantly fatal. When weapons do 100's of points of damage, and your DR is half what you'd want it to be, you're suddenly either making death rolls, or are simply vaporized. Even if do manage to get your armor and weapons well balanced (and *Ultra-Tech* does a decent job of this), the large numbers you're dealing with means that a small fluctuation can wipe out a character. 20% of the average damage a blaster bolt or fragmentation grenade explosion is much more significant than 20% of the average damage of a sword thrust. Either your armor matches the average damage, in which case you're dead, or your armor is truly save, in which case you're impossible to hurt.

All of this, of course, is realistic. As armor gets better and better, weapons have to get more and more lethal to penetrate it. The "small" spillover left over from a weapon that can penetrate ultra-tech laminate armor almost certainly has enough energy to vaporize fragile organic tissue. But that's realism. What I'm worried about is playability. I want to be able to have characters strutting around in their TL12 armor with TL12 weapons, and to be able to have some hope of taking damage and surviving should a combat situation arise.

This article proposes an alternate system for hit points, armor damage resistance, and weapon damage, designed to solve these problems. Although you don't need to know this in order to use it, it is based on a logarithmic scale (in contrast to the linear scale of straight GURPS). I call the system pGURPS, and the values in the system pDam, pHP, and pDR. (This is a relatively obscure Chemistry joke.) I know that others have played with a similar system; for example, a while ago, Anthony Jackson posted to the GURPS/4e Pyramid message board a pointer to his log damage system, which I haven't read. I started this back a couple of years ago the last time AotA looked like it might almost be a going concern, and worked out the basics of the system then. It's only recently (as of late 2002) that I wrote most of this article and fleshed it out.

The design goals are:

- It should be as simple and usable as the current GURPS damage system— or, indeed, more so, since the numbers will be more manageable. People hear the word "logarithm", think yucky higher math,

and then assume the author is one of those GURPS math geeks who has no sympathy for Joe Gamer. While I am a math geek, I do have sympathy; logarithms underly the motivation for pGURPS, but you do not need to do anything more than how to add and subtract to use it, any more than you do with standard GURPS. The clumsiest part is using all the tables to convert published GURPS values for hit points, damage, and DR into pGURPS values, but that sort of thing will come with any conversion.

- The focus of a roleplaying game are the individual player characters. Hence, damages that they are likely to be subject to should be on a scale appropriate with their typical fortitude. With GURPS, this means that a severe but not overwhelming weapon against reasonably commensurate armor should do at most approximately 15 points of damage to a character.
- As stated above, GURPS works well for fantasy weapons. For this reason, pDR, pHP, and pDam values less than about 10 should be close to the DR, HP, and Damage values from standard GURPS.
- Vehicle combat and other things where damage is huge should still work on the same system as personal combat.
- pHP, pDR, and pDam should scale logarithmically. That is, when something gets twice as damaging in “real world” terms, to first approximation you should add a constant value to its pDam.

This system will allow you to use explosives and high-tech weapons against high-tech armor, but with “left over” damage values in a range comparable to the HT of normal GURPS characters.

This system is not realistic, as noted above. On a logarithmic scale, the “real world” difference in how damaging is pDam=50 and 51 is much greater than the difference between pDam=5 and pDam=6. However, if one point gets past DR, it will only do one hit point of damage to

a character, regardless of how strong that one point was “really” supposed to be. If you want realism, use the standard linear GURPS system. This system is designed for more heroic games where playability is more important, and you want your characters to be able to survive the occasional blaster bolt.

Basic Mechanics

Things, for the most part, work just as in normal GURPS. Roll your pDamage based on the suitably modified damage dice for a weapon, subtract the pDR from the damage done, and then the left over is applied against the target’s pHP. Blow through and crippling rules work exactly as they do in standard GURPS.

A few things need to be modified, however:

Costs of Extra HP

You may wish to charge 10 character points for each extra hit point rather than 5 character points in racial templates. I haven’t decided if this is really a good idea, and may change my ideas on it in the future. The reason is that in this system, once you have more than 10HP or so, 1 pHP is worth more than 1 HP—it represents more physical damage “soaked up”. However, I’m of the opinion that extra HP and (especially) DR is overpriced for science fiction games in GURPS as it is. Especially with DR, it gets prohibitive to build a robot character with a reasonable number of points that has enough armor to defend against the sort of weapon that random adventurers are likely to be carrying around. Charging a flat rate for pDR largely solves this “problem” (if you indeed agree with me that it is a problem).

Converting HP and DR

To figure out a character’s (or vehicle’s, or building’s) pDR and pHP values in the pGURPS

system, start with their standard GURPS value. (For HP, this means normally HT, but could be ST if you prefer, as I do, the optional rule of basing HP on ST.) Then, use Table 1 for DR or Table 2 for HP to convert the HP or DR values to pHP or pDR. For larger values, interpolate on the table. In general, a factor of 10 in HP or DR should correspond to an *addition* of 16 points in pHP or pDR. Table 3 lists a set of additions to apply to pGURPS when the damage or DR increases by a factor in GURPS.

DR Divisors

Many types of weapons in GURPS have a “DR Divisor” which reduces the effective DR value of armor against attacks from that weapon. This becomes a “pDR Reduction” in pGURPS. Use Table 3 to figure out the pDR Reduction from a GURPS DR divisor value. For example, if the DR divisor is 2, then the pDR of armor is reduced by 4 against an attack from that weapon. If the DR divisor is 10, then the pDR of armor is reduced by 16 by an attack from that weapon. Never reduce the DR of armor below zero. Against some attacks, some forms of armor will be ineffective, but (except perhaps in the case of magical curses) it will never *amplify* the attack.

Rigid Armor and Explosions

Against explosions, hard sealed armor has its DR value squared in GURPS. In pGURPS, *double* the pDR value of rigid sealed armor against an explosion.

Damage Conversion

For weapons which do a small or moderate amount of damage, the pGURPS pDamage value is identical to the GURPS damage value. Here, “small” damage is defined as anything less than 3d. (2d+4 should be converted to 3d under the standard GURPS “dice plus adds” rule.) For

Table 1: Damage Resistance Conversion

GURPS DR	pGURPS pDR
1-7	1-7
8-9	8
10-11	9
12-13	10
14-15	11
16-18	12
19-21	13
22-24	14
25-28	15
29-33	16
34-38	17
39-44	18
45-51	19
52-60	20
61-70	21
71-80	22
81-92	23
93-108	24
150	27
200	29
300	32
500	35
800	38
1,000	40
1,500	43
2,000	45
3,000	48
5,000	51
8,000	54
10,000	56

weapons which do more damage, the most important rule is *never roll more than three dice*. Any more than that gives a statistical spread which is way beyond anything the pGURPS system can handle. For weapons which do “a lot” of damage, roll 3d, and *add* (i.e. never multiply) a number to the result. To determine this number, figure out the average amount of damage that the weapon does under GURPS. (Each die of damage gives an average of 3.5 hit points of damage.) Look this up on Table 2, using the

Table 2: Hit Point Conversion

GURPS HP	pGURPS pHP
1-11	1-11
12-13	12
14-15	13
16-17	14
18-19	15
20-22	16
23-25	17
26-28	18
29-32	19
33-37	20
38-42	21
43-48	22
49-56	23
57-64	24
65-73	25
74-84	26
85-97	27
98-112	28
150	31
200	33
300	36
500	39
800	42
1,000	44
1,500	47
2,000	49
3,000	52
5,000	55
8,000	58
10,000	60

average damage as the GURPS HP value. The weapon's pDamage is 3d plus the pHP value minus 10.

For example: a TL9 blaster does 6d of damage under GURPS. This yields an average damage of 21 points, which corresponds to 16pHP. Thus, the pDamage value of a TL9 blaster is 3d+6. This is still a fair amount of damage, and will usually immediately take out an unarmored human! However, relative modest armor

Table 3: Multipliers and Divisors

GURPS factor	pGURPS addition
1.5	3
2	5
3	8
4	10
5	11
7	13
10	16

(pDR 6 or so) will give that human a fighting chance of survival, whereas that human would still be making immediate survival rolls under pGURPS.

Another example: a TL9 blaster rifle does 12d of damage under GURPS, or an average of 42 points of damage. Table 2 shows that 42 HP corresponds to 21 pHP, so the blaster rifle does 3d+11 points of damage. That's still a serious weapon— but rather than *twice* the damage of a pistol, it does five more points of damage than the pistol.

Impaling and Cutting Wounds

Impaling weapons in the pGURPS system *add* 5 points to the damage that penetrates armor. *Cutting* weapons *add* 3 points to the damage that penetrates armor. This means that an attack which penetrates armor with 5 points of base damage does the same damage in GURPS and pGURPS; one example of this would be a ST 13 character doing average damage with a cutting broadsword against a foe armored in chain mail.

Note that there is a benefit to this system! The math for dealing with (at least) cutting wounds is easier than it is in standard GURPS.

There is also a drawback. Minor impaling wounds (e.g. those for which only one or two points penetrate DR) have suddenly become a whole lot more effective. Optionally, for impaling or cutting attacks where 5 or fewer points

of damage penetrate DR, drop back to the standard GURPS rules.

Increases with TL

Rather than the standard GURPS rules, just add 2 to the amount of damage that an energy weapon does with each increase in TL over the TL of its introduction.

Explosions

Under the standard GURPS rules, damage from an explosion is quartered for every additional “base range” (2 yards for small explosions, more for bigger explosions) away from the center of the explosion. Reference to Table 3 reveals that under pGURPS, instead of quartering the damage, 9 points should be *subtracted* from the damage that the explosion does (until it reaches zero). This, however, is not a pleasantly round number, so instead subtract 10 points of damage for each step.

Example: according to *GURPS Compendium II*, one pound of TNT does $6d \times 2$ points of base damage. This means an average of 42 points of damage. From the conversion of the blaster rifle above, we already know that this means that in pGURPS, the pDamage of one pound of TNT is $3d+11$. Suppose you roll 8 on 3d; this means that at the center, the explosion does 19 points of damage. Two yards away, it only does 9 points of damage. Four or more yards away, the explosion does no damage.

Benefits & Drawbacks

The two main benefits of this system are part of the stated design goals. The values of damage which penetrate armor (when the armor and weapon are well-matched) will be at most comparable to the typical quantity of hit points an individual human or human-like character can be expected to have. Additionally, you can

deal with huge monster vehicles that have ungodly numbers of hit points under GURPS (just browse *GURPS Ogre* for some examples), but only have to deal numbers at most of order 100 under pGURPS— and, by and large, only need to add and subtract numbers rather than multiplying numbers.

The biggest drawback of the system comes in systems similar to *GURPS Vehicles* or *GURPS Robots* to design things. There, a linear system is really nice; a given cost or weight of armor will give a given bonus to DR. On this system, however, a given cost and weight of armor will give a pDR bonus which depends on how much pDR you’ve already got. This can be a nightmare for crunchy detailed design systems such as are found in *GURPS Vehicles*. (It is much less of a drawback for a more abstract system. The starship creation rules in my *Fudge Space Opera* are easy enough to use, even though *Fudge* is itself an inherently (and unstatedly) logarithmic system. Done cleverly, this doesn’t have to be too bad. However, I’m not going to write a new design system. If I want a complicated design system, I’ll just use *Vehicles*, and convert the damage and armor numbers to pGURPS values when I’m done.

The second drawback is that, of course, this system is non-standard. Before using any armor or weapon from a GURPS product, you have to convert it (by looking up the values on the tables) to the pGURPS values. This is a huge impediment to use of this system, and indeed I have not yet tried to use my pGURPS system in my TL12 GURPS space opera PBEM game. I haven’t decided if the benefits of bringing damage levels in line with an individual person-centered game are worth the hassle of having to convert everything. And, if I am going to convert everything, I haven’t convinced myself that I’d rather just run off and use my *Fudge Space Opera* rules instead. . . .