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Game Design for Contesters — Part 3: Lighting a Fire

As much as I appreciate the praise I received for the first two articles in this series, I was hoping that at least someone would be asking me by now to help raise a few million dollars in mezzanine financing for a new startup that will make you rich while introducing ham radio to millions. I reread what I wrote, and I see my problem.

I did not light a fire. I filled a bucket to the 1 percent mark, and you are waiting for me to fill it some more. This time I'll give you more links and recommended reading, so you can run on ahead without me. Besides, I don't really know what I am talking about — at least as in comparison to my original sources.

Pay attention, because nothing less than the future of our hobby is at stake. I do not mean just contesting; I mean *all of ham radio*. You will save this thing we love. Or you won't — in which case it will die. Let me explain.

Are We Antediluvian?

Allow me to share a conversation I had at a social gathering last year.

"Ham radio? Are you kidding me? Ham radio is antediluvian; dead as a doornail," the other fellow began.

I became upset, but I did not know *how* angry I should be, because I did not know what *antediluvian* meant. So I asked.

"It means 'from before the flood' — pre-Noah's ark," he explained. "Look, when were you born?"

"1952."

"So you don't get it. Nobody born before 1970 gets it."

"Gets what?"

"Life."

"Why don't I get life?"

"Because you did not grow up playing games. Otherwise you would know that life is a game."

"Really. You think I don't understand life?"

"Look, did you come home from school and play 'Counter-Strike,' 'Sims,' or 'World of Warcraft?'"

"No. After school, I ran guys on 20 meters, and on the weekends I'd stay up 2 days straight working thousands of guys all over the world."

"Do you guys still use Morse?"

"Yeah. I love code. Much more fun than voice."

"I rest my case, ha! Antediluvian. These days there is a little thing called the Internet. Or haven't you heard?"

This conversation took place in January 2011 at the cocktail reception the night before my very first game designer's seminar. As you can imagine, I was upset, and I wanted to punch the guy, but — luckily for both of us — he walked away shaking his head. And luckily for me, I did what I always try to do with my anger. I transmuted it into passion.

Before we give this jerk a piece of our collective minds, let us try to imagine what he was thinking.

Education is not filling a bucket, but lighting a fire.
— William Butler Yeats

Read *Just for Fun* by Linus Torvalds, the founder of *Linux*. Although lots of people have been paid to work grueling hours creating commercial software, Torvalds and hundreds of others created one of the most successful operating systems of all time *just for fun*. In the first chapter, "The Meaning of Life (Sex, War, *Linux*)," he describes three things that motivate every living creature. "The first is survival, the second is social order, and the third is entertainment. Everything in life progresses in that order. And there is nothing after entertainment," he wrote. Torvalds makes the case that sex has evolved the same way: Procreation, family, then fun. Industrialized countries with easy access to birth control have low birth rates, but plenty of sex goes on just for fun. Even war has followed the same path. Every day millions upon millions of people come home from work to fight wars in front of their computers. Will this lead to peace or to more *real* war? Watch *Make Games, Not War* (**http://vimeo.com/25681002**).

I want to find that guy from the cocktail reception and say, "Most old people don't get it, but I get it, and I was playing massively multiplayer games for years before you were born. Also, Linus Torvalds was born in 1969, so *there*!"

What about you? Do you get it?

Hams Just Wanna Have Fun

One reason the Radio Act of 1912 banished amateurs to the wasteland below 200 meters was because the Navy complained that some hams were forging messages and faking distress signals.[1] What Bartle Gamer type[2] (**www.mud.co.uk/richard/hcds.htm**) were they? *Killers*. Why were they doing it? *For fun*.

Even during our early history, the public service component of ham radio was, quite frankly, a tiny part of the whole, and we'd fight over who got to participate in emergencies. See *The Radio Ham* sketch on the BBC (**www.youtube.com/watch?v=6Bz2110fOyA**). The only public service I ever did involved the 1972 Nicaragua earthquake. Everything else I've done with my hobby has been unabashedly for fun. With the plethora of communication options available to everyone, perhaps the *only* reason for ham radio to exist is for fun — and that is good enough for me.

According to the Entertainment Software Association (**www.theesa.com/**), 72 percent of households in America play video or computer games, the average player age is 37, and 42 percent of them are women. These people think that having fun is not just a good reason to do something, it is the *only* reason. Old people might feel that these players are spoiled, selfish, overgrown children with an acute sense of entitlement. I can empathize. I used to think that too. But now that I've gotten a hint of what the best of our young people are up to, I've changed my mind completely. After all, if the only thing Torvalds did with his life was create *Linux*, would you call him spoiled, just because he had a ball doing it? The generation that grew up on games has taken to heart the words of that great philosopher Mary Poppins, who said, "In every job that must be done, there is an element of fun. You find the fun and — *snap* — the job's a game!" If you think work should *not* be fun, then you do not understand fun, and your job is in jeopardy. Read *The Happiness Advantage* by Harvard's Shawn Achor, and *Reality is Broken* by Jane McGoninal.

Contests are No Fun for the Non-

Contester

Unless you're already a contester, Amateur Radio contests are obscure and no fun. You and I know what a thrill it is to run stations on 14.009 in the CQ World Wide CW. But what would it take for a 12-year-old looking over my shoulder to experience the same thing? First, he would have to take my word that I am having fun, because my logging program looks as if I could be itemizing deductions on a tax return. Then, he will have to learn a bunch of theory and regulations, find someone to give him a test, pass it, learn the code, get a rig, put up an antenna, operate a bunch of little contests, wait until November, discover that a dipole does not cut it, save up for a beam, put it up, wait until November, discover he lacks the skill to hold a frequency, buy an amp, wait a year…and so on. You get the idea.

Even if we aim to recruit contesters only from the existing ham population, game designers know that we are doing it all wrong. Consider the 47-year-old ham who has logged just 2105 contacts and 142 countries in his entire life. Now imagine what he feels when he sees K3LR make 13,306 contacts, with 3008 Qs and 166 countries on 10 meters alone. Will he love us or hate us? We should bury contest results somewhere on the Internet, because those of us who care will surely dig them up anyway, and others won't bother. But the articles for public consumption should concentrate on stories of ecstatic 47-year-olds who added 14 new countries to their DXCC totals in *only* 17 hours.

Competition is *de*-motivating, unless you are within 10 percent of winning. People want to see their score shoot up quickly at first and slow down as they go higher. The first one million points should be much easier than the second. Our contests with multipliers do exactly the opposite. In the 2011 CQ WW SSB, K1DG logged 835 more QSOs and 48 more mults than W9RE, yielding a difference of 2,104,856 points. But if I'd worked 835 QSOs and 48 mults, then my score would have been a measly 107,468.

Our sense of fairness is logarithmic, just like our hearing, and our scoring should work like the decibel scale. If the score were calculated as $10^6 \times \log_{10}$ (Points × Mults), then the relative ranking would be unchanged, but K1DG and W9RE would score 6,975,848 and 6,866,536 points, respectively, and I would have a respectable 5,031,281 points. This makes me feel like I have really accomplished something, and since K1DG is less than 2 percent ahead, W9RE will feel it's quite possible that he could win next year. Both are valid sentiments. Normal people think of top contesters the same way as they view top investment bankers. How can they possibly have "earned" 200 times the points for operating 48 hours, compared to a little guy who operates for only 12?

An Easier Win?

Making the score logarithmic does *not* make winning any easier or harder but preserves the relative ranking of all the players. The logarithmic score makes it easier to get a higher score early on, and it makes the top players appear to be closer to neck-and-neck rather than furlongs apart.

If you're just ambling, you can cover a mile in 20 minutes; if you walk briskly, you can do it in 15 minutes — a 25 percent increase in score. This might encourage you to begin jogging, and later you might see if you can run a whole mile in 10 minutes. This is fairly easy, and it will increase your score by a further 33 percent.

It wasn't until May 1954 that Roger Bannister ran a mile in under 4 minutes, and in June of the same year John Landy of Australia shaved 1.4 seconds off his time, a difference of just 0.6 percent. Today the world record stands at 3 minutes 43.13 seconds. If you're inclined to set a new world record, then doing it by 1/400th of a percent will be motivation enough.

But, if running were scored as ham contests are, and going from a 20 minute mile to a 10 minute mile earned you only a 1 percent increase in score, while going from 3:43.13 to 3:43.12 got you an additional 2 million points and a 30 percent increase in score, it would do nothing to encourage anyone to set a new world record. Instead, it would make the walker feel as if it wasn't worth even buying running shoes.

The ham radio contesting "on boarding" experience is atrocious. Newbies *should not even know that top guns exist*, or they would never take to the air. Rookie events are held by appointment and are few and far between. Is it fair to teach you a skill now, and then make you wait a year to use it again?

What Do We Want? *Contests.* When Do We Want Them? *Right Now.*

We need contests that you can play whenever you want and that are fun from the instant you turn them on. Contesting

Plants vs. Zombies, approximately 6 minutes into the game

should come *before* licensing, and it should lead to ham radio. Put another way, we need to invent a "gateway drug."

Play Plants vs. Zombies™ for a half hour. You can do it for free online (**www.popcap.com/games/plants-vs-zombies/online**). You'll have to sit through an ad and then press the "Start Adventure" button, but, seriously, do it now, because it will help you to get a feeling for what I am talking about. Press "pause" now.

Now, wasn't that easy as well as fun? Did you notice that there are hardly any instructions, and that it is nearly impossible to fail. Six minutes into play my screen looked as it does in Figure 1. I learned to plant sunflowers and harvest the sun icons they spawn, which are used to grow plants that shoot peas at the zombie onslaught. I'm already three minor levels up in the first major level, and I have just been introduced to the cherry bombs that I can use to blow up zombies wholesale.

Station vs. Zombies: A New Contest Program

Read the book *Theory of Fun*, in which author Raph Koster says that while game designers enjoy playing games, they enjoy designing them more. When a new game comes out, game designers will play it only long enough to grok[3] the new ideas in it, and then they will rush back to their own projects and incorporate what they've learned.

I must be a game designer at heart, because about 10 minutes into Plants vs. Zombies I had to stop because I wanted to design a game that would take a player from zero to CQ WW after a week's play.

Levels 1 and 2: Learning the Code

Welcome to Station vs. Zombies. You are manning a research station in a desert on Planet Ion, and you are under attack by zombies. You have a big gun that shoots "bleeps" that come in two sizes: bullets and RPGs (which are three times as long as bullets). Each zombie can only be killed by a pattern of bullets and RPGs that are unique to that zombie's ID, as indicated

Station vs. Zombies

Station vs. Zombies, now with station ID. Note that 6Y4M and 8P5A are simulated, but OL3Z is real.
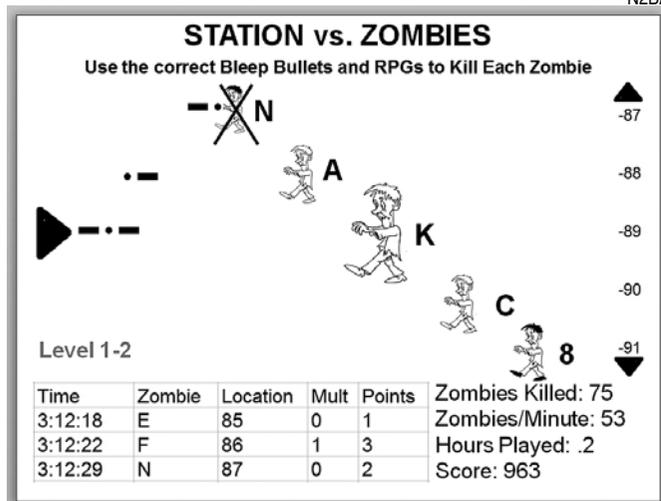
by a letter or number. For example, it only takes one bullet to kill an E, one RPG to kill a T, but an RPG and then a bullet and then another RPG to kill a K. You must discover bullet patterns through trial and error.[4]

You send a bullet by holding down the left arrow key for a short period of time, and you fire an RPG by holding the same key down for three times as long.[5] A tone will sound when you press the key. As long as you maintain the 3:1 ratio of RPGs to bullets, you can shoot as fast as you want.

At first zombies will attack slowly and only one at a time, but after you master the bleep patterns for all the zombie IDs, they then speed up in Level 1.2. In Level 1.3, a few zombies will attack simultaneously, and you can line them up with your gun by using the up and down arrow keys.

At Level 1.4, the zombies get longer IDs, some of which are words and others meaningless gibberish, such as W3LPL, TI5N, C5A, PW7T and V26B.

At Level 2 the situation reverses. Now the zombies bleep their IDs, and you have to type the corresponding letter(s). Eventually multiple zombies appear, and their bleeps differ in pitch. You can scroll among them with the up and down keys, and if you do not successfully type their IDs, you must get out of their way before they run you over.

Moving on Up

At Level 3 you get your own "station ID," and you kill zombies by first listening to their IDs, typing them and then you sending your own station ID in retaliation. Level 4 introduces noise and signals of variable loudness. Level 5 introduces six different bands with their own zombie strength, density and static level. Level 6 introduces a complex scoring scheme, and you learn how zombies clump into tribes based on ID prefix, with their point values based on their distance from your station.

Not Quite on the Air, But on the Net

In Level 7 you discover *you* are also a Zombie. Now you can play a multi-user Internet version, where simulated zombies are sure to always be available, but where other human players might also appear as zombies to you, just as you do to them. When you kill a real player, next to their ID in the log will appear a smiley face, and if you click on it you can interact via *Skype* video chat.

At higher levels you discover that Planet Ion really exists, and all the zombies live on its surface, which is called the "Ion-O-Sphere." Amazingly, most of these real zombies also speak, and some of their zombie wars are conducted in English. They have an induction ritual that requires you to pass a written test on electronics and the rules of warfare. Station vs Zombies will teach you what you need to know and document your progress with "open badges" (**www.openbadges.org**).

Occasionally these real zombies organize their own versions of the contest using arcane radio equipment and big antennas to blast their bullets and RPGs into the ionosphere. Some of their stations are massive, and if you score well on the Internet version of the game, then you might be invited to man their big guns, as in the movie *The Last Starfighter*.

Reach Level 10 and Station vs. zombies will interface to your rig and rotator, and, if you insist, you can configure it to look like you are itemizing tax deductions.

Flow versus Know

In Part 1 of this series, I talked about the flow channel, an alternative state of consciousness you enter when a challenge matches your skills and demands your undivided attention. Sending and receiving Morse code requires skill, while passing a license exam only requires knowledge. Contesting requires both. The big thing we lost when the Morse code requirement disappeared is that hams no longer have to develop skill, only knowledge. My Amateur Extra class exam is part of my history — a bunch of questions and answers long forgotten. Morse code, on the other hand, is a part of me, of my very being. Perhaps this is why I like CW contests so much more than phone events.
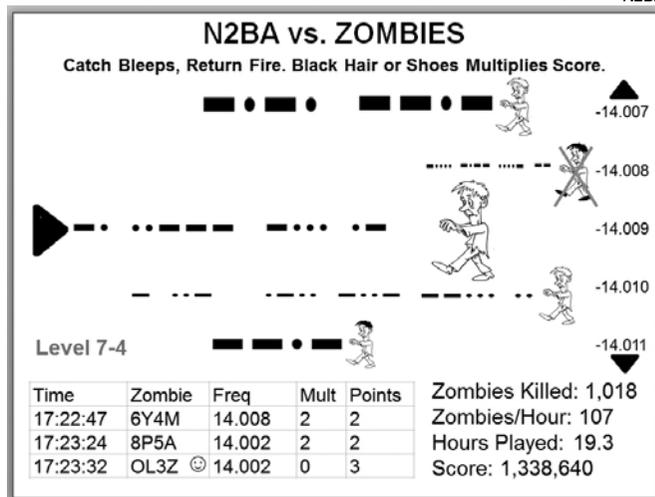
How to Become Someone New

To get a ham license you first must know that ham radio *exists*, and then you must learn *about* it. Hopefully, you will find a club or an Elmer. Then you will learn a bunch of *facts* and pass an exam. At that point you are a ham only in license and call sign. You must learn how to *apply* your knowledge and *show* others on the air that you know what you are doing. Only then will you begin *practicing* a skill. And if you only chew the rag on phone, then you are not going to be practicing many new skills at all (see Figure 4).

To win a contest, you must *grok* it; it has to become one with you. Many of the hams whose call signs fill your logs are no more contesters than I am a golfer. I kind of know the rules of golf, and I can hit a ball about two-thirds of the time, but I cannot play without thinking, and nobody who calls him or herself a golfer would call *me* one.

I learned English first by hearing and then speaking (or patterning) the language. Only later did I learn its rules. Likewise, the best way to become a contester is to *start off* by operating contests, not to end
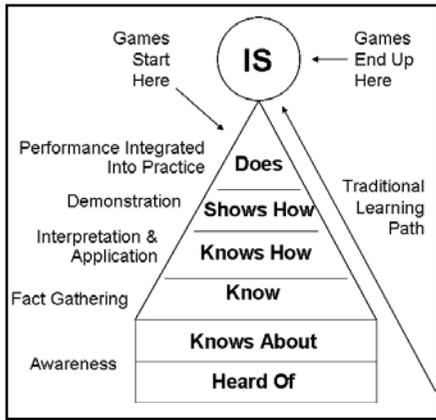
Miller's pyramid of competence. Games skip all the lower stuff and teach by doing.

up there. Contests should be easy at first, getting harder in step with your improved skills. The moment you are ready to level up to the CQ WW, you should be able to it *now*, not wait until next November.

Computers are infinitely patient, and they can monitor your performance and adjust the challenge to keep you in the flow channel. I bet that if Station vs. Zombies were implemented properly, it would take the average sixth grader no more than a week of summer fun to learn the code and be ready for the CQ WW at 28 WPM. Attaining such competence for grownups might take a little longer.

Out with the Old

In summary, climbing Miller's pyramid of competence is an old person's way of doing things, and it is no fun. Disciples of Mary Poppins, who have grown up on games, want to start at the top by *doing* something that is fun until it becomes a part of who they are. They might go back to study the rules formally, but they probably won't, just as few of us ever study grammar.

Contesting for the Masses

We have to stop thinking only about what we experienced contesters want and begin thinking about what is best for *everyone else*. We need to bring people from where they are now to where we hope *they* want to be. Ham radio is fun, and that alone is a good enough reason for it to exist.

Contesting is the most fun you can have as a ham, with or without your clothes on. We should not restrict contests only to hams, and we should not hold the best operating events only a few times a year. As good citizens, however, we should not constantly clog the airways with our marathons, and that is why contests should be available over the Internet 24/7. If we can create flight simulators that do an excellent job of preparing someone to sit in a real cockpit, then with a computer, a

keyboard and headphones we should be able to do a fine job of simulating sitting in front of a computer and a keyboard with headphones on.

In short, contests should be the *entry point* for new hams, because they are the most fun things you can do as a ham, and they require the least technical knowledge.

Five Things to Do Before Next Time

1. Play The End of Us (**http://the-end-of-us.com/**). Game developers also run 48 hour contests, and this one was created at a Global Game Jam (**http://globalgame-jam.org/**) When I play this game, I think of what is happening to my hobby.

2. Watch my interview with Jesse Schell, author of *The Art of Game Design* (**www.noshortageofwork.com/pages/2899**). I also recommend that you buy his book, and my interview will explain why. While you are at my Web site, sign up for the newsletter.

3. Implement Station vs. Zombies, or something else of your own invention. Don't study programming but instead find a weekend programming contest, and learn by doing (see **http://en.wikipedia.org/wiki/Hackathon**). There are also short contests for game developers, such as the Indie Game Fest (**www.igf.com/**). When you are ready to commercialize your idea, don't go to business school, but join a 48 hour contest that starts Friday after work and ends by Sunday night, by which time you will have both launched your business *and* pitched it to venture capitalists who are ready to write a check (see **http://startupweekend.org/**). On second

thought, when it comes to contests, perhaps we really *are* antediluvian.

4. Upload your game to Newgrounds (**www.newgrounds.com**), a site started by Tom Fulp when he was in high school. Tom is also the creator of the best selling video game Castle Crashers and the son of K3WW.

5. Let me know the instant you have something because I want to play *right now*.

Feel free to contact me, if you want help brainstorming or play testing. I hope to see you all on Planet Ion very soon.

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Notes
[1] http://en.wikipedia.org/wiki/Radio_Act_of_1912
[2] See "Game Design for Contesters — Part 2: Fun," by Brooke Allen, Sep/Oct 2012 *NCJ*
[3] "Grok" means to understand something fully and intuitively, to be one with it. The word first appeared in the novel *Stranger in a Strange Land* by Robert Heinlein.
[4] In 1980 Pac-Man was the first game to appeal to women. Previous games had a shooting theme, while Pac-Man's main theme was eating. A variant of Station vs Zombies for women might be called Station vs. Snack-Man, where instead of shooting bullets and RPGs the snack men shoot small and large power pellets. The skin of this game would be different, but the skeleton would be the same. Some feel that if more young women enter the hobby, then more young men may follow.
[5] Or the right arrow key, if you prefer. The middle finger of either hand is used to "tune" up and down, and the index finger is used to shoot bullets.

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