

Forest Service

The Forest Service pays lip service to the need to let many fires burn in the wetter years in order to maintain a healthy forest, but so long as their only means of protecting human infrastructure from fire is to put it out, that's what they'll do. That's also what gets them their paycheck. Red is Green. It's the Forest Service motto. There's a real need for equipment designed specifically to protect structures as the fire passes, but I see no awareness of this by Forest Service management. Neither the Forest Service nor anyone else has anything designed specifically for structure protection at the urban interface.

The Forest Service policy of more roadless areas is somewhat misguided. On the one hand, it keeps most people out, reducing the risk of fires, erosion, exploitation, and other forms of human degradation, but on the other hand, most fires are lightning caused, and without roads there's no ground access for fire control. Most fires should burn, but there are important times and places where they should not. We need to close and rehabilitate a great many existing roads and ATV trails and restrict recreational vehicle off road use to zero in most places, but the goal is not to completely isolate vehicles from the forest. There is a legitimate need for firewood, but we've taken it way past sustainability. The volume of firewood removal needs to be substantially lowered, and roads need to be redesigned and rerouted, but it's not an all or nothing game. If we're to drop the harvest by half, we need to find alternate heat sources for half the people who currently heat with wood. Pissing people off will not help educate them to respect and understand forest ecology. Firewood is a very polluting luxury for most people. Gathering firewood is very fossil fuel consumptive unless you live close to the source.

Fear of erosion is totally misguided hubris. Erosion has been going on since before there were forests on the earth. Logging, thinning, cattle, and other human interventions have exponentially accelerated the volume and pace of erosion, but Mother Nature can deal with it in her own sweet time.

The longstanding Forest Service policy of clearing drainages to confine erosion is severely tunnel visioned. It just results in worse flooding further downstream where the Forest Service doesn't have to be aware of it. It also contributes substantially to depletion of the aquifers. They're gradually becoming aware that we need to slow the runoff from the top down and allow it to soak in, but not nearly enough.

In a paranoid response to publicity over the recent dramatic increase in the severity of wildland and interface fires, there's a lot of forest thinning going on in a misguided attempt to reduce fire danger. In the 70's when we thinned the southwestern forests, I'd probably killed about a quarter million trees before I realized that we were doing much more harm than good. The more enlightened districts are turning to fire rather than chainsaws to get the job done, but most of them still don't understand that most of today's forests have lost their ability to live with fire, due predominately to logging, sheep, cattle, thinning, and climate change.

Due to variations in temperature, rainfall, elevation, latitude, temperature, aspect, slope, soil type, fire, disease, logging, and thinning, every bit of forest is different and has a

different response to any given method of logging and thinning. The Forest Service policy of one basic universal method of selective logging and subsequent thinning has resulted in the conversion of many billions of dollars of what should have eventually been tall straight valuable timber into low quality, sometimes almost worthless overgrown bushes and in most cases has resulted in a substantial increase in fire danger. Any young forest sufficiently thinned to effectively reduce fire danger requires constant maintenance forever and produces short, fat extremely flammable trees that are essentially worthless for producing quality lumber. It will never mature into natural climax forest until it burns and starts over. Most of what we logged and then thinned in the Southwest thirty to fifty years ago has recently been consumed by large, intense, stand replacement fires.

There is a prevalent concept that a natural Southwestern Ponderosa forest is a rather open, park-like ecosystem. In moderately arid subclimates under most conditions this is how a healthy mature forest will look [until it gets logged]. That a mature healthy forest has very few low branches is clear evidence that these trees grew to full height with the competition for light that only a dense thicket provides. Any healthy young forest capable of producing quality lumber and eventually a fire resistant climax forest is dense. Most of the lumber that the logging industry produced 75 to 150 years ago was free of knots, often for as much as 40 feet. This is very clear evidence that they grew up with full light competition.

Most types of forest are not steady state ecosystems. They have a distinct birth, life, and death, sometimes on a time scale of thousands of years. Inappropriate thinning of a young forest is like feeding growth hormones and steroids to children to make them grow up faster. You don't get what you're hoping for.

Most forest is born the morning after a fire. In the past, the common course of a forest fire has been to crown during the afternoon and run on the ground in the night and morning. This resulted in a patchwork of clearings, varying in size from a few trees to thousands of acres, amidst a forest made much more resistant to fire.

Where the fire has crowned, the intense heat has sterilized the soil. Mother Nature doesn't start a new forest with trees. Over the next few decades a progression of life stabilizes the soil. Bacteria, wildflowers, weeds, grasses, shrubs, bushes, deciduous trees, and finally conifers. Under certain conditions grasses will dominate and meadows will form. Under most conditions, dependent on proximity to seed trees, soil moisture, and wind speed and direction, thickets of varying density eventually sprout and immediately begin to compete for light, water, and nutrients.

Where seed drops are dense, due to competition for light, growth is mostly vertical. In its youth a dense thicket is extremely vulnerable to fire and often has to start over again, but when it finally gets a chance to mature, it eventually becomes the most resistant to crowning of all the forest types because it has the widest gap in the ground to crown fuel ladder. When it matures it is eventually very open and park-like. It produces, by a wide margin, the most and the highest quality lumber. Appropriate thinning procedure is to recognize its harvest value and continuously, but gently, cull only those trees that have definitely lost dominance, with an emphasis on maintaining light competition. First usable harvest will commonly be a few posts and vigas at about 8 to 12 inches d.b.h. and 10 to 25 feet of relatively clear trunk. Any major attempt to thin for fire prevention will destroy a forest's ability to produce

quality lumber by decreasing light competition. Some burning of slash and duff is appropriate. Appropriate fire control is thinning low branches and trees that have lost light dominance, with contour related clear-cut for firebreaks where new forest starts. The goal is to have many small forests of differing ages interspersed with contour related strip meadows for fire control.

Where seed drops are sparse or where a young forest has been over-thinned, lacking the competition for light, growth is mostly horizontal. In areas of marginal precipitation it may eventually turn to desert. In its youth a sparse forest is less vulnerable to fire because of tree spacing, but as it matures it becomes very vulnerable to crowning because the trees carry a lot of large low branches and subsequent seed drops fill in the fuel ladder with smaller trees and shrubs. Because the trees are short and fat, this type of forest is extremely vulnerable to stand replacement fire and produces a low yield of poor quality lumber with a large volume of logging slash. Appropriate thinning is to recognize its potential for wildlife, recreation, and fuelwood. Thinning should be for maximum water and nutrient uptake and should be more aggressive for fire prevention with site-specific fuelwood harvests for firebreaks. Slash and duff burning should be selective with an eye towards keeping the ground mulched and should be done with caution lest it get away. In many cases the best thing is to let the forest burn and start over.

These are very simplified explanations of very complex ecosystems, but the basic observation is that we need to thin continuously but gently, with a variety of site specific thinning styles, for the most part culling only the trees that have lost light dominance, and never let the light in. We need to imitate Mother Nature when we log. Mother Nature weeds and clear-cuts, but very seldom does anything resembling selective logging. It will take many hundreds of years to restore the forests that we logged in the last few centuries. The best way to rejuvenate our forests is to build with steel and stone and a host of other stronger, more durable materials instead of wood.

The lumber we're harvesting from today's small, second and third growth timber is very low quality crap. The Forest Service doesn't seem to have a clue that if you want real lumber, you can only harvest a forest once. It will take hundreds of years to bring our new forests to harvestable maturity. Sustainable logging is not a tree by tree process. It's a forest by forest process. The Forest Service thinks they can grow trees when we need to be growing forests. Sustainable logging requires many small forests of varying ages, and a much smaller harvest. For the most part, today's young, second and third growth lumber is an extremely poor quality, obsolete product when compared to other building materials.

Presently, we're wasting almost all of the available salvage from fires, beetle kill, urban intrusion, thinning, and whatever else kills trees. We should be utilizing salvage timber for lumber and new growth thinning for post and beam construction, chip board, and fuel, but on a much smaller, much less intrusive scale.

The primary cause of this waste is the clumsiness of ignorant do-gooders in opposition to the ignorant gluttony of the logging industry and the incompetence of the Forest Service. Logging after a fire cannot be done with the methods and scale of the current logging industry without causing massive erosion, but it can be done with minimal impact on a small scale with different methods and equipment. Unfortunately, by the time anyone manages to

get past the bureaucracy of NEPA, the timber is rotten. This has gone on for so long that most people capable of environmentally competent salvage logging have had to move on to something else.

The problem with implementing these and many other changes is that, just like the rest of our present government, in the Forest Service there's no competition, no bottom line, and it's almost impossible to get fired. The common saying amongst the more intelligent lower ranks is 'fuck up, move up'. The Forest Service is a perfect example of how the scum rises to the top.

Much of Forest Service upper and mid-management seem to be thick as a brick and their oversight is asleep at the wheel. They spend very little time in the forest and know very little about it. They're like a train wreck on the track to good forest stewardship. They're seriously addicted to OPM [other people's money]. Lacking the obligations of fiscal responsibility and lacking competent oversight to document their incompetence, they've fallen into a lazy, arrogant, subcultural insanity of institutionalized false assumptions that drives away any real talent. I've met many people who quit the Forest Service in disgust. Within the Forest Service is a quagmire of institutionally imbedded false assumptions, many large barrels of low-grade pork, and just a whole lot of plain old lazy waste.

I once took an S-130, S-190 firefighting refresher course from the former head of Forest Service firefighting. A lot of firefighters died on his watch and it wasn't hard to see why. Almost all wildland firefighter deaths occur when the wind changes, so he repeatedly stressed the importance of the weather report as a safety factor. Having recently been on scene at a potentially deadly wildfire blowup from a local and not uncommon weather phenomenon that no weather report could have forecast, I described the event. He spent a few minutes trying to explain it with his superficial knowledge of meteorology and when it didn't fit he said 'lets move on' with a hint of anger in his voice. A lot of firefighters die trusting the weather and he just didn't get it. When there's fuel between you and the fire, you're at the mercy of the wind. The weather report is a vital tool in planning firefighting strategy, but betting lives on a weather report is nuts.

Over at the fire cache, they lined up 15 chainsaws in a row and ran the dozer over them. A few months ago, they were cutting up ATVs with a cutting torch. The other day the typical pile of hand tools showed up at the scrap yard; every one with the handle cut off flush with the metal so it's a pain in the ass to get the old handle out. They bring good money on EBay. They're very high quality and they're not available for sale to the public. Along with them was a pile of high quality metal fuel jugs; every one bashed in with an axe. I've seen and heard dozens of firsthand accounts of wanton waste after fires. Pallets of new chainsaw parts. Pallets of hand tools. Thousands of feet of hose. Hundreds of meal packs... Dumped in a hole and buried. I heard one firsthand account of armed guards at the landfill to prevent scavenging. This is typical of the day to day operation of the U.S. Forest Service. The official Forest Service policy that everything that is disposed of must be so thoroughly destroyed that it can never be used again, in combination with the desire for new equipment every year, has been in place for at least 45 years that I know of. Almost all of it is good

used equipment, bought and paid for by the American taxpayer. If you look into it, you'll be appalled at the level of waste.

The Forest Service uses private contractors to move equipment around and Jim was hired to drive his semi to the northwest. The stuff he moved could have been bought new for less than his fuel costs alone.

The Forest Service had a program called Fire Prevention Patrol that hired engines and crews from local volunteer departments to patrol, looking for fires. For the first few years, if they found a fire, no matter what size or potential, if they made any attempt whatsoever to put it out, their employment would be immediately terminated. All they could do was call in a Forest Service crew if they were lucky enough to be in a place where the radio worked. It was pure pork rationalized as public relations that took volunteer department equipment and personnel out of service on their districts. They weren't a bit more useful than anyone else in the woods, but they cost taxpayers a bundle. They eventually realized how foolish it looked, the policy changed, and everyone involved needed red cards.

We were working a fire in a cottonwood grove in Arenas Valley. It was part of a larger grass fire at a loose urban interface. It hadn't burned in many years, so the duff and dead branches were as much as four feet deep. It was way overdue to burn. There was enough already burned open field and a road on three sides to contain it, and a bare dirt field to the north, so we were just herding it along. We didn't have enough water to put it out, but we had just enough water to keep the heat down enough to not kill the trees. Suddenly, a Forest Service crew showed up, never checked in with incident command, and commenced to dig a line and start a backfire. Where the two fires converged, the heat killed quite a few trees. Behind their line was only about another twenty yards of thicket to burn out before the bare dirt field. By cutting a line in the middle of deep, dry, fine fuel, the Forest Service crew put themselves in mortal danger if there was a sudden change in the wind, a common event that time of year. When I tried to talk to them about what they'd done, they scoffed. They were the professionals, we were just volunteers. They left, thinking that they'd shown those dumb volunteers how it's done, when the reality was that they'd completely screwed up.

The Forest Service called one day and asked if I wanted to buy some sawlogs pushed for a road rebuild and it's associated gravel pit and could I move the half next to the pit tomorrow so they could enlarge it. They'd been pushed for six months. I bought the portion by the pit, skidded them out of the way, with no small inconvenience due to their hurry and the fact that they'd been pushed into a jackstrawed mess, and started hauling. They called one day and asked me to drive out and negotiate an immediate sale alongside the road where they were about to block access. I declined because there wasn't a single saw log at that spot and even if their had been, a half a day and forty miles of driving for each of us wasn't worth ten bucks worth of logs. Much of the Forest Service has no concept whatsoever of fiscal responsibility.

Just recently, it took Tim one entire day on the phone to slog through the bureaucratic bullshit just to get his crew motel rooms for the week.

In 2005 I was crew boss in supply on the Bear Fire. It's akin to quartermaster's assistant, and it brings you in contact with all aspects of personnel; the head honcho, the division bosses, the communications crew, the firefighters on the line, the sawyers, the scouts who

parachute in ahead of the fire and scout terrain, the engine crews, the truck drivers, law enforcement, the camp crews, the bookkeepers, the caterers, the laundromat, the recyclers, the trash collectors, the people selling souvenir t-shirts. By about the fourth day we were up to around 700 people. In the nine days that I was there, we handed out about thirty-five cubic feet of double-A batteries. On the eighth day the rains came and put the fire down. Our efforts, as is common with recent large stand replacement fires, ended up having a minimal effect on the course of the fire. We had no air support because of the Warm Fire. The Warm Fire burned a very overgrown, underburned, creatureless mixed conifer forest on the North Rim of the Grand Canyon. It was so ready to burn that it consumed 25,000 acres in one night. The rebirth was long overdue. Air support was mostly a waste of time and resources and was politically motivated because it was a national park. That air support would have been useful on the Bear Fire. The Bear Fire burned until it ran out of fuel and the rains put it out. The immediate cause of the fire was probably a camp fire, but the real causes for its destructive intensity were long term fire suppression and incompetent logging and thinning thirty to fifty years previous in combination with a winter without snow. Where Turkey Creek meets Gilita Creek it runs in a deep east west V canyon that was too steep to log. On the north side it was big yellow ponderosas in sand and cactus; on the south side it was virgin spruce, hung thick with moss. It was so cold in December that we couldn't get the wine out of the bottle. In the summer there was a pretty little meadow at the fork, and Gilita Creek was full of Brown Trout. It was right in the middle of the fire.

The year after the Skates Fire in the Gila, I wanted to do some salvage logging on a spot where an intentional backfire had moonscaped a ridge. They had back burned from a road, in the afternoon, with the wind and sun at their backs, uphill, into a dense ground to canopy fuel load of oak, juniper, and ponderosa that had been kept from burning for way too long and met the fire at the ridge. From twenty miles away, it looked like a not so small nuke went off. The fire was so hot that the rock was shattered four inches deep in places. Four hundred year old junipers were burnt off to just the trunks and the stubs of major branches and boiled to the core. Some of the ponderosas were burnt up completely. It took a week to get hold of the ranger, and another week and a half for him to meet me on sight. I showed them around and they said ok, take anything you want. It was obvious that they knew next to nothing about forest ecology. They commented on how well the non-native grass that had been helicopter seeded had controlled erosion, not noticing that in the places they'd missed, the native vegetation had done just as good a job and that their replacement had sprouted quickly and grown tall, shading out the natives, and by the next fire season was tall, dry and crisp and a fire hazard. It took them another week and a half to figure out how to write a permit and when they did, it wasn't even vaguely accurate as to what I was taking. By the time they got around to giving me the permit, much of the ponderosa had already started to rot. They charged me twenty bucks for five loads. The time they wasted was worth many hundreds. From start to finish they did more harm than good.

Like a lot of forest that has been logged, then thinned, the north side of Signal Peak was ripe to burn, and it did. Quite a few people saw it coming, but nothing meaningful was done to deal with the potential for a large fire. After logging and subsequent thinning, the north side of Signal Peak was a continuous, uniform, deep canopy of second growth mixed

conifer. This is a very unnatural condition, and is a typical result of Forest Service logging and thinning policy. Once the fire gets in the canopy with a bit of wind, there's no stopping it. What was needed was a variegated canopy with some contoured clear-cut for fire control. Too late now.

In September I went to the Forest Service to see about getting a few saw logs off the burn. They were starting to clear-cut the roadway up the north side of Signal Peak. There were some big Douglas Firs that needed to come down that looked like they'd make good quality tongue and groove flooring, and there were a lot of fairly large Ponderosas. Because it had been selective logged and thinned, most of it was full of knots, but that's what you get these days.

Several weeks and three trips to the woods later, [take a look, meet with the Forest Circus Kid in charge, take a look at what he's marked, take a look at what he's unmarked], he tells me the permit will be ready on Monday morning. Monday morning we spend 40 minutes at the Forest Service office trying to keep a straight face while they try to figure out how to write the permit. They finally gave up and called it a viga sale. Thirty two dollars and fifteen cents. The Forest Service had already wasted around five hundred bucks of our time and gas money and the taxpayer's time and gas money. Other than some simple guide lines [only cut trees that can fall on the road, don't cut anything that still has any needles, clean up when you're done], there was no need whatsoever for their involvement.

The kid didn't have a clue what a saw log was. He'd mark a snagly pile of knots far from the road and leave a good saw log right next to the road. Since they were all coming down anyway, there was no reason whatsoever to mark them in the first place.

There were many hundreds of prime quality vigas along the road and he had a hotshot crew cutting them into six foot lengths for firewood. Except for decorative fires and the few people who have a woodstove designed for continuous full air flow, nobody with any sense burns ponderosa for firewood. It creosotes the chimney worst of any local wood. Enticing people to burn ponderosa is likely to get someone's house burnt down. Fir isn't much better. It burns cleaner, but, since it's on a burn scar, all of it is covered in thick, filthy black soot. There's always been a market for high quality vigas. Sustainably harvestable vigas are rather rare.

Jim wanted 70 vigas and the Forest Service sent him twice as far to the Burro Mountains to get much lower quality live vigas. When he heard that I was salvaging logs on the Signal Fire, he set up a viga sale with the Forest Service. What the kid marked for him was almost twice as big as what Jim had specified, thereby seriously compromising his house plans and substantially increasing the cost. Meanwhile the Hotshot crew cut up the size he wanted. Since they were all coming down anyway, there was no reason whatsoever to mark the vigas in the first place.

The Forest Service seeded the entire fire with barley. Since it didn't grow until after the rains came, it had very little effect on erosion, but it shaded out and stunted a lot of the natives. For the next few years the burn scar should have been full of wildflowers, but the barley shaded them out. Since there was almost nothing to protect in the watershed below the fire, there was no reason to stop most of the erosion in the first place. The money could have been spent on much more realistic and efficient erosion control with ground crews on

the burn and further downstream That mountain used to be a thousand feet higher. The forest will come back in its own sweet time. There's a lot we can do to help the process along, but seeding a foreign and unnatural grass isn't one of them.

The Forest Circus Kid wanted me to remove the tops of all the trees I took in some misguided generalization about reducing fuel load. It would take many hundreds of dollars worth of time, fuel, and pollution to haul them to the landfill where they'd be a nuisance and a fire hazard. Skidding them out would just tear up the woods more. Some of them needed to be rearranged, but most of them needed to lay right where they were to mulch and replenish the soil. There was no talking to him. He's the boss, these are the rules, so shut up and do what you're told. I didn't. It was just too ridiculous and destructive.

What's left after the Hotshot crew dropped all the trees is a jackstrawed mess, and the only fire hazard is because of the barley. It could have been done much differently.

Regardless of his intentions and rationalizations, the reality from my end of it is that the Brown Nosed Forest Circus Kid is an ignorant screw-up running a sleazy little protection racket on the taxpayer's dime who disgusts and demoralizes his crews. If this were any other business in the world he'd have been fired a long time ago, but this is the Forest Service. You can't get fired and the browner your nose, the quicker your paycheck grows.

It took four months to arrange a meeting on site with the district ranger. It turned out that she had never been out there. When I told her I wasn't interested in going out there just to get lectured by fools, she said "trust me". Lectured by fools is exactly what I got. She took the timber management guy and the kid with her. They spent hours lecturing me on the many reasons why a few dozen bare dead sticks in the middle of half a million other bare dead sticks were a fire hazard. All of it was the most pathetic nonsense. They were obsessed with the rules for a conventional logging contract which had very little to do with a burn scar, and they never once looked at what we were actually dealing with. Who needs to think when you can find some rules to follow? Talking about their reasons with the many intelligent people I know with real knowledge of fire and forestry, I find complete consensus that the three of them made ludicrous fools of themselves. We'd all be laughing if it wasn't so disgusting.

From start to finish, the Forest Service did more harm than good.

After almost a century of foolish fire suppression, the Forest Service decided, just as foolishly, to let it all burn. They let the Whitewater-Baldy Complex fire burn at the end of a long, La Nina induced drought. If they'd held it back for just a few years, we could have burned it in a wet summer and it would have been a good fire instead of total devastation.

Today's firefighting technology, methodology, and equipment are drastically incompetent to deal with the new fire dynamics in this age of global warming. These large fires are having a very significant effect on the melt rate of almost all of the world's glaciers. The cost-benefit of controlling these large fires goes far beyond the local event. Forty million dollars worth of large air tankers flying in formation in combination with some strategic strip clearcuts could have shut most fires down for a fraction of the environmental and monetary costs. A few million bucks worth of converted A-10 Warthogs would have a fair chance at shutting down a lot of fires before they get away. When I corresponded with the

head of Forest Service Fire and Aviation Management, I got a very lazy, arrogant and obsolete view of what aerial firefighting should be. He seemed clueless about fire, forestry, and aviation.

I realize that the Forest Service is filling your ears with a lot of official sounding plans about how it should be done, but please consider their long-standing track record of miserable failure and try to realize just how institutionalized the arrogance of their incompetence is. There were certainly many forest wise people who knew better while the Forest Service put out all the fires for most of a century, and there are many forest wise people now who understand that current Forest Service selective logging, thinning, and firefighting practices are just as misguided and destructive. I could go on and on with many more stories of Forest Service incompetence and so could a thousand other people. They're not called the Forest Circus for nothing. For the health of the forests, the firefighters, the communities at the wildland interface, the logging industry, the local and global environment, and the state and federal budgets, get a second opinion and put our efforts to better use.

There are a lot of districts within the Forest Service, and a lot of variation in the expertise of their staffs. I can only speak from direct experience about a few of them, but I hear a lot of anecdotal accounts from people who have interacted with the Forest Service. Having talked to hundreds of people about Forest Service policy and practice, the overwhelming opinion has been disgust with the arrogance and incompetence of their leadership and mid level bureaucracy.

There's not all that much forest in the Southwest left to burn, but there's a lot of forest being reborn after the fires. Let's not let the same bureaucracy that burned it down be in charge of stewarding its rebirth.

There are many fine intelligent people in the Forest Service who know what needs to be done, but they seldom get the chance due to the massive inbred inertia of bureaucracy, ignorance, apathy, corruption, and incompetent leadership. They're much more likely to quit in disgust than they are to move up to a decision making position.

There's a tipping point where, in any working environment, incompetent management can drive away any real talent and competency by causing them to quit in disgust. Large portions of the U.S. Government have tipped into pervasive incompetence.

In a business environment, incompetent management generally results in failure and a more competent company fill the void. In government, there's no bottom line, no competition, and you can't get fired.

I see little chance of this changing from within anytime soon without massive intervention from the top down. As time retires the old guard, here and there things are gradually getting better, but not nearly fast enough, and in some districts it's getting worse. A substantial haircut of selective early retirement would surely help, but who's to do the picking and choosing?

Most important is gaining the ability to fire bad personnel. This is a problem that's pervasive and destructive throughout government agencies. Without the ability to fire incompetent personnel, bureaucracies can reach a tipping point where the core management

becomes incompetent and corrupt to the point where it drives away competency and becomes self sustaining. This is at the core of most of the current disgust with government that's prevalent in the world today. The pervasive waste, incompetence, and corruption of our current government is not so much the politicians, but the large percentage of unelected mid-level staffing throughout the many administrations that are a bunch of incompetent screw-ups who can't get fired. This needs to change.