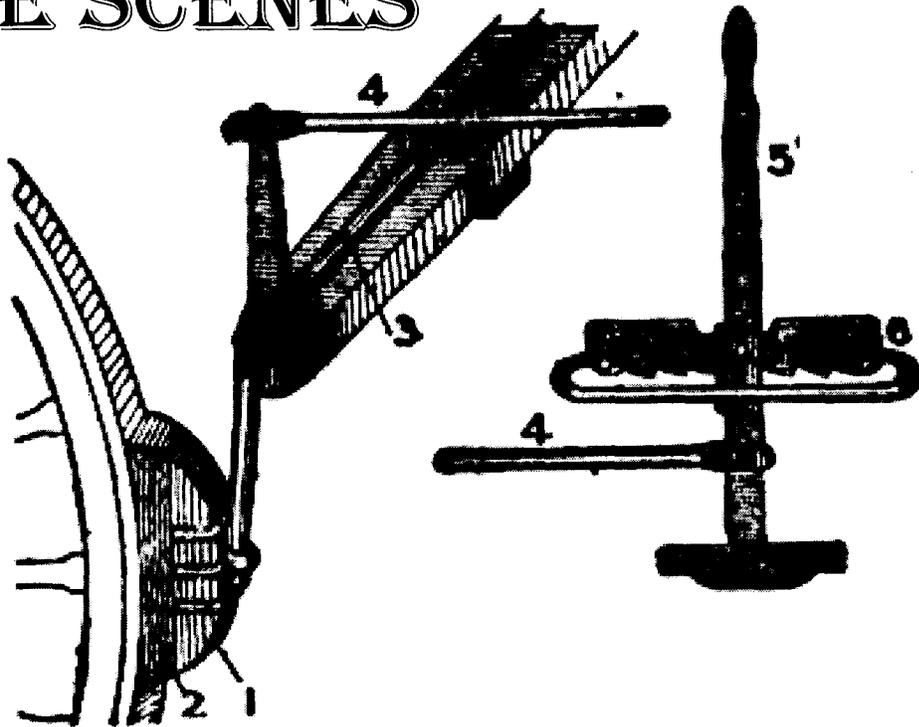


Brake Test

THE HIGH ASSURANCE
BRAKE JOB -
A CAUTIONARY TALE
IN FIVE SCENES



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BRAKE JOB -
A CAUTIONARY
TALE
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By
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ABSTRACT:

As interest grows in the concept of assurance, the field seems to be dividing into a few distinct camps. Each approach has its strengths, but there are gaps in the coverage of each which are sometimes left unaddressed by the various proponents. By casting the discussion in terms of an analogy to a brake job, with each camp represented by a different garage, the presentation will try to raise questions and suggest directions for future work, hopefully in a humorous and memorable manner. While it is not our position that the emperor has no clothes, that does not mean that the emperor doesn't need a fashion critic occasionally - a need that this presentation will attempt to fill.

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SCENE ONE - A FORMAL AFFAIR

<We open with a CUSTOMER entering the reception area of a neat and tidy garage>

CUSTOMER> Hello? Anybody home?

<We hear low chanting starting to rise in volume. Customer opens a squeaky door
The chanting grows in volume as the Customer steps through the door>

CHANTERS> Our Model
Which art in Theorems
Second Order Predicate Calculus be thy form.
Thy equations be normed,
Thy proofs be formed,
in Zed, as they are in INA JO...

< a FORMAL METHODIST interrupts the chanting>

FORMAL METHODIST> Brothers and Sisters, transition to Visitor Greeting State!
<to Customer> Transition to Greeted State, Customer Unit!

CUSTOMER> Excuse me?

FORMAL METHODIST> I'm sorry, force of habit. Once you get into using the language, you sometimes forget to go back to standard English. Let me try again. Hello!

CUSTOMER> Um, hello. You guys don't have a thing about the Hale Bopp comet, do you?

FORMAL METHODIST> No, that would be astronomy. Different mathematics entirely.

CUSTOMER> Well, anyway, I'm shopping around to find a garage to do my brakes for me. It's an 89 Honda Civic...

FORMAL METHODIST> You've come to the right place! Welcome to the Formal Methodists Garage! I'm sorry if things seem a little odd right now, we were in the midst of our morning meditation on the infinite beauty of pure mathematics.

CUSTOMER> <skeptically> So that's what that was. So, do you do brakes?

FORMAL METHODIST> Do we do brakes? Do we do brakes? That statement, in addition to being imprecisely formulated, does little to describe the depth of what we do.

We apply the power of math to precisely specify, provably model, and derive the implementation of a solution in a mathematically correct way!

CUSTOMER> That's great, but isn't a car awfully complicated? Doesn't it take a whole lot to precisely describe one? And how do you do it for every possible car on the road?

FORMAL METHODIST> Well, yes, that is a valid concern. To be honest we're not quite there yet, but we're working on it, and we should have some significant breakthroughs real soon now. But still, we've already been able to formally model and prove assertions about this - TA DA!

CUSTOMER> I may not be a math whiz, but that's a roller skate.

FORMAL METHODIST> Yes, but it's now a formally specified roller skate!

CUSTOMER> That's neat, but what about brakes on a real car?

FORMAL METHODIST> We can help there, too. You'll get a far better brake job if you can precisely state what you want. English is imprecise, and stating things formally is a big improvement. Then you can check the specification for inconsistencies.

CUSTOMER> I suppose that's true, but how do I do that?

FORMAL METHODIST> We've developed a tool for you to use. Come over to the computer.

CUSTOMER> OK, so how does it work?

FORMAL METHODIST> Well, you enter your assertions, and they are mapped against a set of theorems and lemmas.

CUSTOMER> Llamas are cute animals, but what do they have to do with brake jobs?

FORMAL METHODIST> Not llamas, lemmas!

CUSTOMER> Oh, like that guy from Tibet who wears the orange bed sheet?

FORMAL METHODIST> No, he's a lama, too, but with only one "l". These are lemmas - L E M M...

CUSTOMER> Don't they run off cliffs together?.

FORMAL METHODIST> <exasperated> Not lemmings, lemmas! It's a precise mathematical construct! Could we continue, please? I don't quite know how to cope with interrupts.

CUSTOMER> Look, I appreciate the work that went into this, and I know you're making progress, but I need a brake job now, and I don't want to have to learn a new language or run any computer program other than Duke Nukem or Doom to get it. It doesn't have to be mathematically perfect, but I need to be on the road again with new brakes by this weekend. No offense, but I've got a few more places to visit. If I decide to bring my car here, I'll call for a formal appointment. Good luck with the models and specification languages!

<CUSTOMER exits through door>

FORMAL METHODIST> <calling after CUSTOMER> Transition to exit state! Excuse me, I mean "Good-bye!"

<muttering to himself> Why can't people learn to deal with simple equations?
<chanting resumes - starting loud and fade out>

CHANTERS> Our Model

Which art in Theorems
Second Order Predicate Calculus be thy form
Thy equations be normed,
Thy proofs be formed,
in Zed, as they are in INA JO...

SCENE TWO - TEST IS BEST

<CUSTOMER enters next garage>

CUSTOMER> Hello? Is anybody here?

TEST MECHANIC> Hi there. May I help you? <pauses> Am I speaking too quietly? You seem to be straining to hear something.

CUSTOMER> Oh, I'm sorry. I was listening for chanting.

TEST MECHANIC> Let me guess - "Transition to Greeted State"?

CUSTOMER> How did you know?

TEST MECHANIC> It's a small community. We all know each other.

CUSTOMER> In what way?

TEST MECHANIC> Oh, there are conferences and such. You get to know the other people, and you even pick up some understanding of their work. Of course, in our shop we prefer to use nice, solid, statistics, not that formal mathematical stuff. There's no trig to it. It's easy as pi. And it doesn't cost so much that anybody needs to cosine. Yeah, give us a statistical problem, and I'll sigma guys on it.

CUSTOMER> Man, 'tis a inordinate amount of math puns you're throwing out. Oh good grief, now I'm doing it! Look, I need a brake job. '89 Honda Civic. Nothing irrational, no strange tangents -AAAGGGHH! See what you've started? Anyway, I'm looking around to see who can do the work.

TEST MECHANIC> Don't worry - puns come with the business, I think. Some of our best mechanics seem to shift into wrenching wordplay in every spare moment. I guess you'd say they're into "Grime and Pun-ishment". Anyway, I can assure you that we are fully capable of doing the work, but our special value is the confidence we can give you with our testing program.

CUSTOMER> Testing program? Is this another one of those software things?

TEST MECHANIC> No, no... Let me rephrase it. We test our work both during the job and afterwards to verify that it functions correctly under all circumstances.

CUSTOMER> Wait a minute. How can you test all circumstances? You'd never get done! There are too many possibilities.

TEST MECHANIC> That's a typical view from someone new to the field. Of course we can't test every case. What we do is carefully chosen and weighted tests which when combined provide a high statistical likelihood of being an acceptable simulation of the most probable actual circumstance you are likely to encounter.

CUSTOMER> So phrased another way, you use your best judgment, pick a representative sample of the possible cases, test them, and hope like heck that one of the tests will catch anything that's wrong.

TEST MECHANIC> It sounds so... so...*arbitrary*, when you put it like that. And besides, we go one step beyond that. Somebody might try to break your brakes. You know, just like on all those TV Movie of the Week shows. We check how our work holds up to that sort of thing. We've got a special crew of mechanics just for that. They all started at the Exxon station down the street, and they really like the Exxon ads with the big cat running down the road, so now we call them our "tiger team". Catchy, huh?

CUSTOMER> But wait a second, there's almost always a way to make brakes fail, no matter how good the brake job was, so what does that prove? And do you go back and fix anything damaged in the process? What happens if you loosen something in those tests and forget to tighten it again when you're done?

TEST MECHANIC> OK, so maybe it isn't definitive, but it's fun to do, and besides, we usually get a nice dinner out of it when the tiger team does their stuff just before our "panic stop because a flock of sheep is in the road" test. I do love lamb chops so...

CUSTOMER> Well, I'll still give you points for actually being able to do the brake job, and the testing is good, even if I'm not sure it tells me everything I need to know. Still, I'm going to check a few more places before I decide. Thanks for your time, and I'll let you know my decision.

TEST MECHANIC> Thank you, and I'm sure you'll be back. Testing makes truth!

<CUSTOMER exits>

SCENE THREE - A PROCESSIONAL PROFESSIONAL

<CUSTOMER enters next garage>

PROCESS MECHANIC> Welcome to the “In Process” Garage! How can we help you?

CUSTOMER> I’m looking around to find somebody to do a brake job on my ‘89 Honda Civic.

PROCESS MECHANIC> Well, here at In Process, we have the capability to do that. Our processes are documented, and this assures you that we have them. And since you know we have processes, we’re sure to be able to do the job!

CUSTOMER> Oh, like Cheez Whiz!

PROCESS MECHANIC> How do you mean?

CUSTOMER> The processed cheese spread!

PROCESS MECHANIC> Not quite...

CUSTOMER> Do you have a lot of experience doing brake jobs?

PROCESS MECHANIC> Well, no, but we’ve done other mechanic-type work before, and our processes are designed to be adaptable to all situations. We’ve got processes for making sure bolts and stuff are loosened and then tightened later. We’ve got processes to check that we don’t have left over parts when we’re done with the job. We got processes for...

CUSTOMER> Wait a second! If you’ve never actually done a brake job, why should I trust you to get it right? I’m beginning to wonder if you’re even a mechanic.

PROCESS MECHANIC> I just told you. We’ve got processes! We paid good money to be evaluated and certified according to the standards of the American Mechanic’s Institute for Speed and Safety.

CUSTOMER> A-M-I-S-S... AMISS?

PROCESS MECHANIC> Yes, we're proud to say that we have been certified to be AMISS at level three, and we're hoping to get something in our shop to be AMISS at level FOUR soon!

CUSTOMER> Why do I not find that tremendously comforting? And why are you saluting like that?

PROCESS MECHANIC> We've got all the process books, and we've got criteria books, too! Hey, Tex! Bring in the process books to show our friend!

<sound of large truck or forklift with backup beeper>

CUSTOMER> Really, that's OK. I believe you.

<loud sound as the books are dropped in place>

PROCESS MECHANIC> Look at them all. Books about our processes, books about the processes to check our processes, books about models of processes, books about criteria we can build things to meet. We've got enough here to open a book store as a side business. And so many pretty colors!

CUSTOMER> Yep, a real rainbow!

PROCESS MECHANIC> You know, I bet before you got here, you stopped at the other places first, right? The Formal Methodists, then the Test-Is-Besters, and now you're here. I like to think of it like being the third little pig in the story. First you run to the house of straw, then to the house of sticks, and then you come here.

CUSTOMER> To the house of books! And it looks like you've got enough processes and criteria and documentation books here to stack up and make a three bedroom rancher with an attached garage. How can you read all this stuff and follow it? When do you do actual work?

PROCESS MECHANIC> Well, that does seem to be a tough task, when you're looking at it from the outside, but we have...

CUSTOMER> Let me guess - you have a process for it.

PROCESS MECHANIC> I can see that you're starting to grasp the wisdom of it already.

CUSTOMER> OK, let's go back to this level stuff. You're at, what did you say? Level three? Is that good?

PROCESS MECHANIC> It's the third step after levels one and two!

CUSTOMER> But is that good? Does that mean you're better than a level one or two?

PROCESS MECHANIC> Well, it means we have a better chance of being good than a two, and way better chance than we would if we were a one. Of course, what "good" means depends upon which criteria you use.

CUSTOMER> Let's stick to processes. If you don't know if being a level three is better than being a level two, then why should I care?

PROCESS MECHANIC> But being a three *is* better than being a two. It means you've got more processes, and you've documented them.

CUSTOMER> But how does having documented processes make you do a better job? Couldn't somebody just do the job, but not write the process down? Or maybe use different processes according to what they are trying to do, instead of having one set of processes for everything?

PROCESS MECHANIC> But if the processes aren't written down, you can't do statistical process control. You can't have metrics. You can't improve the processes!

CUSTOMER> OK, I could see that if you were doing production type work, where you do the same thing over and over and over again, like in a factory, that would help. But you say you've never done a brake job, and for all I know you may never do another one after mine. How does that process improve? And even if you do one a week, or even one a day, they are going to be on different types of cars, and different things will be broken - it could be years before you try enough different ways of doing things to get a good statistical sample. I just don't see how all your statistical process stuff helps much in non-repetitive tasks, other than by just forcing you to think about what you're doing, and how you're doing it. Shouldn't you be doing that anyway?

PROCESS MECHANIC> Gosh, you sound like you've read some books, too! All I know is that having processes is good, and that higher levels are better.

CUSTOMER> That's another thing, how do you tell which processes are better?

PROCESS MECHANIC> You don't. You just have more and more of them, and when you get really good, you start improving the ones you've got.

CUSTOMER> But how do I compare your level three processes to another garage's level three processes? How do I figure out which one is better?

PROCESS MECHANIC> Oh, we don't worry about that. We just try to make sure we have a process for everything, and it doesn't much matter what it is, according to our process consultant. Actually figuring out if it's any good is way too complicated.

CUSTOMER> I guess I'm not sure why just knowing that you have a process, without knowing anything about how good it is, should make me rest easier.

PROCESS MECHANIC> Would you rather not know anything?

CUSTOMER> Point taken. Something's probably better than nothing. But then, in some cases, knowing the process is even more unsettling than not knowing - like in sausage making, Congress, government cryptography initiatives... Still, I think I do want to know how my brakes will get fixed.

PROCESS MECHANIC> We'll figure out which criteria we're aiming to meet, then execute our processes...

CUSTOMER> Look, enough with the processes for now, or I'm going to execute something. Do I make myself clear? Now then, what's this criteria stuff?

PROCESS MECHANIC> Some real smart people who have been in the business a long time have come up with criteria for how brake cylinders should work. For a small fee, they help us figure out which level is appropriate, and we do the work to make your brake cylinders match the criteria. And the whole cost of checking if we made it is in our bill to you - it's not an add on in the fine print.

CUSTOMER> But what if my car's brakes don't fit neatly into one of your criteria's categories? What if I don't care to subsidize all this stuff? Can't you just do what makes sense for my car?

PROCESS MECHANIC> No. Look, I know that if you're not a mechanic, this sounds confusing, but you *must* meet criteria.

CUSTOMER> Why?

PROCESS MECHANIC> Because not meeting criteria is bad! Our process consultant says so!

CUSTOMER> I guess I can't argue with logic like that. One other thing - you talked about criteria for the brake cylinders, but my brake system is more than just the cylinders. There's all the hydraulic lines, and the brake pads, and all of that stuff has to work together or having the best brake cylinders on the planet won't stop my car.

PROCESS MECHANIC> I'm sorry, but that's a systems composition problem, and we don't really have a handle on how to deal with that yet.

CUSTOMER> Will my car stop when I step on the pedal or not?

PROCESS MECHANIC> We're pretty sure it will, but we can't really tell you much more than that.

CUSTOMER> So you're telling me that you've got all these processes and criteria, but you can't answer the one question I care about - will *my* car stop when I put *my* foot on *my* brake pedal when something gets in *my* way.

PROCESS MECHANIC> You could say that, I guess, but we *think* your chances will be better!

CUSTOMER> You think. Is that documented? If Descartes had been into this stuff, philosophy students would be walking around saying "My thought process is a level three, therefore my existence is documented and managed", instead of good old "cogito ergo sum". One other thing I'm curious about - why is there an Abrams tank and a Space Shuttle sitting in the back of the garage over there? Are you one of those militia guys?

PROCESS MECHANIC> Oh, that! The government thinks process is important, and having processes has helped us win all sorts of contracts.

CUSTOMER> But I thought you were auto mechanics.

PROCESS MECHANIC> With processes, you can do anything!

CUSTOMER> But you don't even sound like you've done a brake job! How can you work on tanks and the space shuttle?

PROCESS MECHANIC> We view ourselves as having a wealth of opportunities for process improvement and optimization in those areas.

CUSTOMER> With all of this stuff about teaching processes, and rating people's processes, and meeting criteria, and everything else, I'm detecting an substantial opportunity for folks to optimize wealth, but I'm not sure how that's improving my brake job. I tell you what, I'm still doing my garage evaluation process, so I've got to go, OK?

PROCESS MECHANIC> Sure! We wouldn't want you to ignore your process. Have a good day!

<exit CUSTOMER>

SCENE FOUR - BRAKING WINDOWS

CUSTOMER> Hello? Is anybody here?

TECH SUPPORT> Please step to the window. How may we help you?

CUSTOMER> Oh, I see - I didn't see the window, and I was puzzled why nobody was here.

TECH SUPPORT> Well, we are the innovators in this model of customer service. We call it our windows interface. It's exclusive, but eventually everybody will use it.

CUSTOMER> If it's exclusive, how can it be that everybody will use it? Isn't that a contradiction?

TECH SUPPORT> Of course not. Everybody will use it because we will eventually own most of the garages, and those we don't own will have to be compatible.

CUSTOMER> <skeptically> OK, I guess that would eliminate the contradiction.

TECH SUPPORT> We're always leading the way like that. Look out at the driveway for another example. We've got gates to lock your car in when you bring it for service, just so it will be safe.

CUSTOMER> What if I decide to go elsewhere after talking to you?

TECH SUPPORT> Trust me, once people come in, they keep coming back. After while, you won't even notice the gates. Now, how may we help you?

CUSTOMER> I'm shopping around for a brake job, and I want some information.

TECH SUPPORT> We can book you for the brakes, oil change and transmission service next Tuesday.

CUSTOMER> Transmission service? All I need is a brake job!

TECH SUPPORT> I understand how you would think that, but eventually you'll need the transmission service, and everybody needs oil changes. Our market strategy says that

most customers need these services, so we've bundled them together into our Operational Service package, or OS, for short.

CUSTOMER> But doesn't an oil change need to be done every three thousand miles.

TECH SUPPORT> Two thousand.

CUSTOMER> Excuse me?

TECH SUPPORT> You need the oil change every two thousand miles. If you don't, things may clog up, and your car might just stop working for no apparent reason.

CUSTOMER> But surely a car should be able to go three thousand miles between oil changes. Why 2K?

TECH SUPPORT> <yelling hysterically> WE'RE FULLY COMPLIANT! YOUR CAR WILL BE FINE! <continues repeating these two phrases until CUSTOMER interrupts>

CUSTOMER> Please calm down! All I wanted to know is why you recommended oil changes every two thousand miles.

TECH SUPPORT> Oh. "Why two thousand MILES". Forgive me. I thought you were talking about, um, ah... something else.

CUSTOMER> Even more to the point, why would I want major work like brakes and transmission service at the same time as routine maintenance like an oil change?

TECH SUPPORT> We've found that as good as our Operational Service is, it's important to get upgrades often. We're constantly improving the operation of your automobile's systems.

CUSTOMER> But that doesn't sound right. If you do the job right in the first place, it shouldn't need upgrades so often, should it?

TECH SUPPORT> Well, lots of people seem to think so, but that's because they don't understand the details of all the things we do in the inner workings of your car.

CUSTOMER> But I want to know what you do to my car. I expect you to explain the details.

TECH SUPPORT> Oh, we couldn't do that - that's proprietary information, and besides, you wouldn't understand it. It's very technical, and the only reason that our mechanics can understand it is because we hire all the very best mechanics.

CUSTOMER> So you're telling me that if I have you do my brake work, you'll require that I get major work done very frequently, and you won't tell me what it is, or why I need it.

TECH SUPPORT> Yes. You give us your car, we'll do the work, and you never need worry ever again. We'll tell you what your car needs, and when it needs it. It's pretty easy to understand.

CUSTOMER> I'm not understanding at all! Why should I trust you?

TECH SUPPORT> <begins screaming defiantly at the sound of the word "trust">
THERE IS PLENTY OF COMPETITION! WE'RE FIGHTING EVERY DAY FOR MARKET SHARE! IF WE REST FOR A MOMENT, WE'LL BE OBSOLETE!

CUSTOMER> CALM DOWN!!!! What are you babbling about? All I want to know is why I should put my confidence in you.

TECH SUPPORT> Confidence? Oh, THAT kind of trust. I, um, ah... thought you were talking about something else.

CUSTOMER> Now, let me see if I've got this right. You want me to never take my car elsewhere, you won't tell me what you are doing, you'll sell me transmission service and an oil change with my brake job, even if I don't want them, you require frequent "upgrades", and I'm supposed to take it on faith that you're doing everything right.

TECH SUPPORT> Well, yes. You left out the auto upgrades, but other than that you've got it.

CUSTOMER> AUTO UPGRADE?!?!

TECH SUPPORT> Well, of course! Eventually your old Honda there won't be able to accommodate the new technology we'll need to put on your brakes to bring them up to our new standards. Then you'll simply have to get a new car.

CUSTOMER> And you expect me to go along with this?

TECH SUPPORT> Why not? Haven't you noticed how much of the market we've got locked up?

CUSTOMER> Yeah, and that burger flipping chain down the street has served gazillions of customers, but that does not make it the best burger. Frankly, it doesn't even make it a particularly good burger. It's just the most sold burger. I want good brake work, not the best marketed brakes.

TECH SUPPORT> Suit yourself. We think our brake jobs are the most advanced technology available, at least until it's time to upgrade. Check around if you want, but eventually, you'll be back. Some folks say that resistance is futile.

SCENE FIVE - POETRY IN MOTION

<CUSTOMER, now highly frazzled, enters the last garage>

MECHANIC BOB> May I help you?

CUSTOMER> I certainly hope so. What's your name?

MECHANIC BOB> I'm Bob. You look awfully tired and frustrated. How can I help?

<CUSTOMER takes deep breath>

CUSTOMER> All I want is one brake job
Can you do that, Mechanic Bob?
I guess I should be more specific,
it is for my Honda Civic
which was made in '89
and up to now has been just fine,
but now it needs some work on brakes.
Do you have the skill it takes?

I do not want to write assertions
or other tricky math diversions.
I tend to get upset and tingly
when folks do not speak normal English.

I do not care about some test
of what is worst, and what is best.
Tests may prove to be quite fine,
but the one thing on my mind
is not some vague six sigma sample,
but if my car's brakes will be ample.

I do not like the sneaky gleams
in the eyes of Tiger teams.
If my car should fail to halt,
would they pay if 'twas their fault?

I would have their tiger tail
if my brake job were to fail
because of probing tools or bolts
left undone by clueless dolts
who having had their little hack
did not put everything back!

I do not yearn for process sketched
by experts with their hands outstretched.
I do not care for added fee
for processes at "level three"
I do not know what "levels" mean
or if you can be in between.
And if you meet them to the letter,
does that mean that you work better
than someone whose processes show
they rate a level one below?
That's the thing I do not know -
is your work better, yes or no?

And then there is all this hysteria
caused by these things called criteria.
It may be fun to take a look
at ratings writ in colored books,
but nice as all those digraphs are,
I just care about *my* car.
I just want to find a shop
to do the work to make it stop.

I do not want to have to speak
through windows set up by some geek.
They may be fine in other places
but garages don't need interfaces

I don't want gates to lock me in
if my business you should win.
If I want to go away
you should not try to make me stay.

I want to know what work you do,
and have you tell me details, too.
I really want to understand
all the things that you have planned.

I want you just to fix my car
And not tell me it's gone too far.
When the time comes, I will go buy
a new car, but not when some guy
tells me my Honda is too old!
I should not,
shall not,
WON'T be told!

I do not want transmission work
mixed in as if by some strange quirk
with oil change thrown in for good measure
to add to all of my displeasure.
I do not want that bundled stuff.
One brake job would be enough

All I want is one brake job.
Can you do that, Mechanic Bob?

MECHANIC BOB> <clearly surprised>
Oh my!

I surrender and declare a truce
'Cause you're sounding quite like Dr. Seuss
I'll just briefly review
how we do what we do -
you can tell me if it's any use!

CUSTOMER> Hooray!

MECHANIC BOB> Now then, on to your question. We're a local shop, not a part of any national chain. We have about ten mechanics at any given time, and most of them have been with us for quite some time. We've got years of experience between us, and even the young guys we hire are usually pretty bright. We've done this type of work for long enough that we've got most of the routine tasks down pat, and it's hard to find something that at least one of us hasn't seen before. We keep up with the manufacturer's recall notices and advisories, and we send our people to get trained on new equipment and techniques. We push our guys to get certified in various skills. We buy the best tools we can afford, and we take care of them. Our business is built on referrals and repeat customers, so we try to get to know the cars we service, and keep records of the work we've done on them. If we don't have the tools or talent to do a job right, we'll tell you, and we'll try to refer you to someone we know who can do it right. We won't cut corners or do a job wrong, just to keep the price down. Our reputation is too important for that. On the other hand, we'll try not to do more than is necessary. Profits from unnecessary work are a short term thing, and we'd rather have long term customers.

CUSTOMER> That all sounds very good, but what about all this stuff I've heard about at the other shops? Is *any* of it worthwhile?

MECHANIC BOB> Oh, certainly! Some of it is very interesting! Those folks are all trying to do good things, and we learn from them where we can. We just try to keep our focus on being good mechanics. We don't want to be doing anything that we don't fully understand. We're pragmatic.

Let me give you an example - we care about processes, and if one of our guys comes across a new way of doing things, or a handy hint, or just a situation he hasn't seen before, we try to let everybody know about it. If it's really good we'll send it in to one of the trade magazines, or tell the manufacturer of that car about it. We keep track of how long things take, and try to improve our estimating, scheduling and how we actually do the job. What we don't do is all this hiring consultants, getting rated, and the other stuff that makes the process more important than doing the work. We haven't been convinced yet that it improves our work, or that it tells our customers enough to help them make an intelligent decision. In mechanic's terms, we don't know yet how well that gauge is calibrated, or what the marks on the dial really mean.

CUSTOMER> What about the testing?

MECHANIC BOB> Any mechanic who's any good does testing. When you're first scoping out the job, you test to help you identify the problem, and to check things which may have been damaged by the thing the customer asked you to look at. A bad battery may be a battery problem, or it may be a symptom of an alternator or voltage regulator going bad. You have to test to find out. Then, while you're working on the car, you test to see if parts are too worn, or if the thing you just fixed is working correctly, or if the bolt is tightened properly. And after we're done, we do test drives. But none of those tests help unless you understand what they're telling you, and test alone will not make up for poor work, or bad parts. Tests basically tell you that things are going the way you think. There isn't a test in the world though, that can tell you something if you don't know about the subject. A weird result might lead you to ask questions, and you may learn from that, but the test is never smarter than the guy who thought it up, or the guy using it.

CUSTOMER> Do you use any of that formal methods stuff?

MECHANIC BOB> That subject is kinda tricky. It's always good to specify things as precisely as you can. Saying "do the following work to the following measurements" is much easier to deal with for a mechanic than "fix it". Actual measurements are usually better than vague English. I like the idea of making requirements and specifications more precise. I just don't have the right kind of schooling to understand that really high level math stuff, and neither do most other mechanics. They also don't seem to be able yet to formally prove anything about the cars I work on. When they can, and I can understand

how to use the tools, I'll take another look at it. I'm glad that they are working on it, but I need to keep doing my work without it for now.

CUSTOMER> But what about that other place? They won't tell me what they do, and it doesn't seem to be the best work available, and yet plenty of people seem to go there and be perfectly happy. Are customers paying for work they don't need, or am I just not understanding what's going on?

MECHANIC BOB> Well, there are some things I can't really explain, because I don't understand them myself. I can tell you this, though. Those folks are making a lot of their customers happy, regardless of how they package their service. Some of those customers don't know enough to ask questions. Some don't know there are other garages available. Some do know, but are happy enough with what they are getting that they don't go elsewhere. Others go there just because there are locations of that company's garages all over the place, which makes some people feel safer somehow. It's just another way of doing business, and for a lot of people, it's just fine.

Anyway, it's not entirely about the work at all. It's about marketing, and market share, and providing a product which keeps enough of the customers happy enough, for enough of the time. Even though they won't come out and say it, those mechanics are doing a lot of the same stuff that is being done in the other garages. They just don't tell you about it. And because they're the biggest garage and everybody has heard of them, it seems like nobody expects them to.

The funny thing is that there's this guy down the street named Linus who takes the opposite approach. He'll let you watch what he's doing, he'll tell you where to get your own tools, and there's a bunch of guys who hang around with him who'll tell you how to do your own work, if you think you're handy enough. There are a few garages around that are starting to take that "help the customer do it himself" approach. Who knows if it will catch on, and how much of what the rest of us do will end up being mixed in. It's kind of fun to wonder where it'll all end up. But even in that model, you still come back to the same techniques. It's just a matter of who does the work, and how the information gets spread around to the mechanics and the customers.

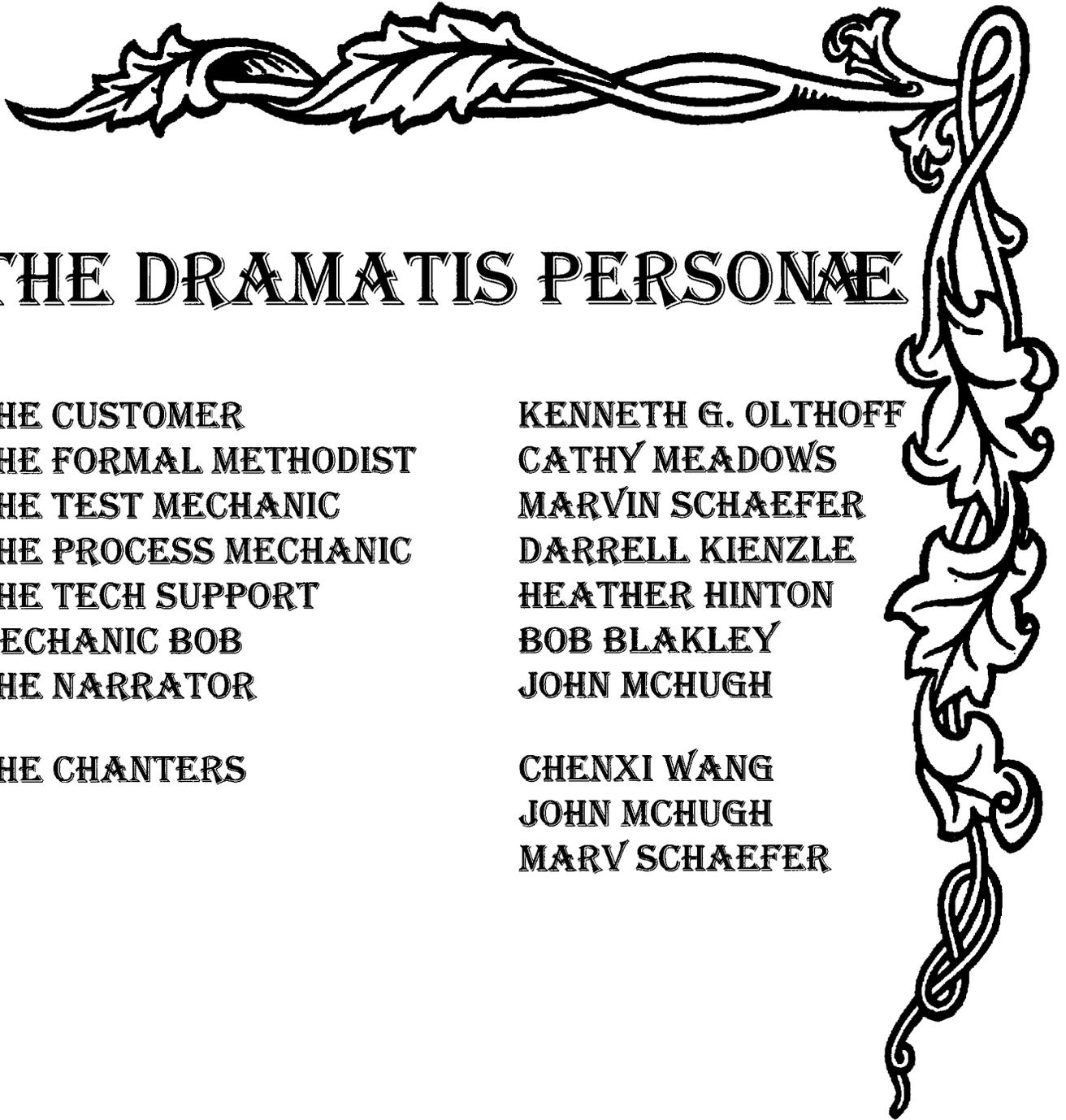
Like I said before, all of these folks are doing good stuff. You just need to decide what you need for your car, and how important all these things are to you. It seems though, that you've had a trying day. Why don't I give you a quote on your brake work, and you can go home and think about all the different things you've heard about today. Then, when you decide, you can make an appointment if you want to have us do the work.

CUSTOMER> <relieved> Thanks! I'll do that. I think I'll probably be coming back here.

Rod Serling-esque NARRATOR> A simple brake job that blossomed into something far more. Our customer has gone for a surreal ride, but hopefully has come back smarter from...

The Assurance Zone...

<Twilight Zone type music up and out>



THE DRAMATIS PERSONÆ

THE CUSTOMER
THE FORMAL METHODIST
THE TEST MECHANIC
THE PROCESS MECHANIC
THE TECH SUPPORT
MECHANIC BOB
THE NARRATOR

KENNETH G. OLTHOFF
CATHY MEADOWS
MARVIN SCHÆFER
DARRELL KIENZLE
HEATHER HINTON
BOB BLAKLEY
JOHN MCHUGH

THE CHANTERS

CHENXI WANG
JOHN MCHUGH
MARV SCHÆFER

