Steve, Solomon Islands, 2005

Carlos: boat room tone, 7-23

Stephanie: let's see, where shall we begin? Maybe we should start with something practical. Would you be willing to go over what you were talking about this morning with us?

Steve: sure.

Talking over.

Steve: I will let me get a chart we can use.

S: You're a great teacher. Have you been a teacher before?

Steve: I have. I've taught navigation. We – Nancy and I had a sailing school for a number of years. And (chart rustling) I've also taught in my profession at University of San Francisco.

S: You mean your profession meaning you've taught law?

Steve: right.

S: Ok so, tell us what this chart is that we're looking at and why we're looking at it.

Steve; This is a chart that shows an area from Fiji to Australia. Solomons and New Guinea. South to Northern New Caledonia. And I just pulled this one out to review some of the things we talked about about how we determine our position and how we use charts to navigate. The numers on the rights side of the chart that go up and down are degrees of latitude, And one degree of latitude is equal to 60 nautical miles, And one minute of latitude is equal to one nautical mile. So that's our basic scale we use to determine distance. The bottom scale and the top scale going across are longitude and even though, they're presented as parallels, longitudes are not parallel but they actually meet at the poles, so at different latitudes the distance of one degree of longitude varies. So we can't use it for actually determining distance except right at the equator.

2:09

Steve: So we um have a GPS global positioning system, that's the – htat tells us where we are. And that information is given to you as a degrees and minutes of latitude and degrees and minutes of longitude. So you take the numbers that are given to you on the GPS and you find the equivalent place for them on the vertical side of the chart. Like 15 degrees 30 minutes for instance would be right here, and then you can take that and go over to

Tr. 6

S: Oh we better hold up because the fax is coming in. Right? Is that what that sound is?

Tr. 7

Weather fax

Tr 8

S; on to the next thing for the moment. Thank you for your flexibility Steve. It's really helpful getting all this. So can you explain to me this is the weather fax that's coming in now, and I wonder if you can explain to me what all these lines are that we're looking at.

Steve: Yeah sure, the um, these weather faxes are sent by a radio into a machine that prints them out on charts and I'm not the world's expert on weather but it shows these lines are lines of pressure. Um and there's high pressure and low pressure and basically by measuring the distance between what they call these are called isobar lines and they're synonymous like a land chart that has lines that grade how steep a hill is. And you notice on those land charts the closer together the lines are on a land chart the steeper the grade because those measure altitude changes over distance. So these measure pressure changes over distance. And it's a gradient. So therefore the tighter and closer together the isobar lines are, the steeper the gradient. And that is the more radical change in pressure over shorter distance, which equates to wind. So

1:37

S: It equates to wind in what way?

Steve: That high pressure moves to low pressure I guess. And so high pressure flows into low pressure and so the closer together in distance the change in atmospheric pressure is, the faster the wind's blowing. And the wind tends to follow the direction of the lines of the isobars, but they're tilted about 15 or 20 degrees toward low pressure. And so what we do is we look at this chart that comes in and measure with a pair of dividers the distance between isobar lines in the area that we're sailing. So like on this one we're up here in Luganville, so we measure, and that's measured by the latitude scale that is on the chart itself, and we can see that this isobar difference is about a little over 3 degrees. And depending on what your latitude is, that is how far north and south you are, that distance equates to wind speed, and I have in my radio book here a chart that's put out by the weather service in New Zealand.

3:08

(rustling chart book)

And it explains pretty much what I said. And it shows at different latitudes what the spacing means. For instance the three degrees spacing near Fiji which is 20 degree south latitude. You

can expect winds of 26 knots gusting to 39 knots. And then there's a correction around a high of an increase by 20%. And we are now under the influence area, that yesterday was a really high pressure of around ten forty. That's now coming off the Australian coast. And moving toward New Zealand. And that high pressure system creates what they call reinforced trades. That is the trade winds that normally blow in easterly direction from the east to the west get accelerated because of the high pressure tends to squeeze together these isobars forcing steeper gradient over a smaller period of distance.

4:17

Steve: so where we are right now, according to the weather fax, it's – and we're a little north of 20 degrees we're about 15 degrees 30, up here in Luganville. So that equates to more so basically you're looking at 25 to 35 knot winds out there today. Which is one of the reasons that we've been waiting a couple of days for the string winds to go by and Fiji they call this situation of a strong high creating reinforced trades a "bogeywalu". One of my favorite terms.

Laughs

S: Why is it called a bogeywalu?

Steve: It's just a period of really high easterly southeasterly winds caused by a high pressure area coming off Australia, it's a very and as the high pressure is very high, if it gets above ten thirty it's considered to be very high and its outside edges it will create gale force winds, So that's what the weather chart shows us. We also look at the weather chart to see if there's any lows coming. This solid dark line is a trough line and it's north of us, and the area around the trough that's a trough of low pressure, and if you can look at these lines the trough comes – it's kind of like a valley. And they call a ridge of high pressure – these curves here – this is the ridge line that comes right up where the ends of these things meet and if you think of it is just as like a a mountain cut sideways and use the isobar lines as if they were altitude lines you'd have a shape kind of like my hand.

6:08

Steve: And this ridge is what's coming right down there. And that's what's called a ridge of high pressure. So when you read in the newspaper for instance that there's a ridge of high pressure formed south of the islands what they're referring to is this line that is formed by these edges here is south of here and that's causing theses increased trade winds. So by tomorrow, in our area, the trade winds will lighten, the seas will go down. And we'll have a much more pleasant journey up to Santa Cruz Island.

Tr. 9

Steve: So, and there's other – these lines are fronts. This is a cold front with the triangles on it. This is an occluded front. This is an occluded front. And a very experienced weather person can deduce a lot more information off these charts than I can. And I sometimes try to listen to either the weather report or people on the radio describe what they're reading from the charts to help me learn how to read charts more, something I've spent several years doing but it's still a kind of an art form. And even these lines and how they're presented are just some person's view of it, or they have computer models that create these these maps, but it's all basically guesswork there's nothing really for sure. You could see something here and it could be wrong it could show strong winds and the winds aren't quite so strong and as this book said that trade winds go in bands so in an area that you average 30 knots there'll be bands of 40 knots and bands of 20 knots and it's not just a homogeneous type of thing, so you just use this to help indicate we can see this dip right here over by Fiji where the trough's coming in and you can see that the isobars there at that period, at that place of dip just to the west of Fiji is quite a bit smaller than what we have here it's almost like 2 ½ degrees. So those are definitely 35-40 knot winds blowing along the west coast of Fiji right now.

So that's basically how we predict weather and how we try to pick a course that takes advantage of it or avoids the worst of it.

1:52

tr. 10

S: so when you get - first of all, how do you get these faxes? How do you know how to get em?

Steve: there's a - there's a transmission schedule. And there's a couple of different stations you can get these from Honolulu which we'll start listening to as we get further north. New Zealand and Australia. And each of them has their own time and frequencies – radio frequencies. And so I have two systems to get weather charts. One is this dedicated weather fax they call it. This is a Feruno. And it has its own radio tranceiver. And it's receiving a section of radio signals directly into this machine and prints out a chart. I also have a modem that's connected between my radio and my computer and I can pull these same charts up on a computer screen. And you don't get a printout but you can save em on your computer screen you can clean em up.

1:00

Steve: We've been using this only because it's been getting better reception. And it's nice for everyone to have a piece of paper but sometimes we run short of paper and then we'll start using our computer. And since I didn't have an inverter until just recently, I wasn't using my computer because it would use up the battery and then I would have to charge it up and stuff so.

Tr. 11

S: So when you look at this how accurate do you consider it? I mean what you're saying is, this is a this is a meteorologist's depiction of what they think is going on. But how big of a surprise are you ready for? When you go out when we go out into the ocean and you say, "well I'm predicting" what would you be predicting at this point, for example?

Steve: Well if we were out sailing today on the east side of these islands I'd be predicting 25-30 knots.

S: And so if – how big of a surprise would you - how how big of a margin of error could you anticipate?

Steve: Oh maybe 20 or 25%.

S: Which means that the winds could be up to

Steve:: 40 knots. And they'd certainly be gusts to 40 knots. It

S: And how fast is a knot?

Steve: A knot is a nautical mile per hour. So it's a little bit since a nautical mile is a little bit bigger than a statute mile, it's something like 8% or 10% more, like maybe 25 knots might be 30 miles per hour. Just roughly. Something like that. So mile per hour is a little less than a nautical mile per hour.

S: So 40 knots might be like 40 miles per hour.

Steve: something like that

S: That sounds like a strong wind.

Steve: It's a very strong wind. It's a wind that you wouldn't as – even though this is a very strong boat and we've sailed in stronger winds than that, the seas get two three even four meters in winds like that. They get is very rough sailing. And for people who aren't experienced it's not a very pleasant felling and the boat can be knocked around quite a bit so you have to learn how to hold on. And generally we don't go out intentionally in gale force winds, that's winds over 35 knots. If we're in port and it's starts blowing up htat hard we tend to wait for em to go down. For us 20-25 knots is a nice wind. You can go out and have plenty

of wind and move along. This is a big heavy boat so it does like a certain amount of wind. But especially with people who aren't experienced, and I've taken lots of people like that sailing. I just find it safer to stay in the 20-25 knot range and if the seas build up past that, unless there's a real important reason, we tend to stay in port now if you're out in the ocean

2:31

Steve: And the wind comes up, we reef the sails I just make them smaller, and the boat handles it just fine and we don't like freak out or anything but to intentionally go out and cause people distress, none of us would have our sea legs, so people might get seasick, so why put everybody through that?

S: right

Steve; But the problem with these charts up in our area is not that they're, it's that they leave detail out. If you compared this weather fax to the Fiji weather fax out of Nandi, that is in the daily paper, you'll see that the weather fax out of Nandi has a lot more detail. It shows fronts, It puts cloud areas. You can look at this and can't tell whether our area right now is under clouds or not. When you see this trough line out here when you compare this with the weather picture in the paper you'll see this whole area that we're under is all marked as being cloudy and that's the rain we're experience.

3:41

Steve: Do you want to take a look at the 30 hour prog now the weather charts show either what you have now, but they also have prognosis that is they predict what they're going to look like in the future and those are the most important so we look at a 30 hour prog, that is 30 hours from now what the weather's going to be like, and a 48 hour one, and then a 72 hour one. And then the further you get the more chance there3's going to be inaccuracies obviously, because they're guessing. Computer models can actually go five days out in advance sometimes, now, it's just you just start taking them with a bit of a grain of salt the further out

Off mic

Steve: The 30 hour prog is usually (ripping the fax out) relatively accurate. And let's see. This shows interestingly a low. Developing over Fiji. And that's gonna cause our wind.

S: So where are we?

Steve: We're right over here.

4:43

Steve: On this big part of Vanuatu, this is New Caledonia. This is all Vanuatu and this is all Fiji. So this low, is forming over western Fiji and it looks like it's going to go south. And you can see this is the starting of it here this is the trough, and the bends in the isobar are happening. And that's going to turn into a low and that circulates clockwise around a low in the southern hemisphere, and counterclockwise around a high.
So these winds turning clockwise around the high they're going counterclockwise, so you can see that in this area for instance in the southeast of Fiji, just about the dateline, there's very very strong winds there.
Rain in background starts here

Steve: Out in front of this low there's going to be winds in the 45 knot area that's only a about a two degree isobar span, at 20 degrees and according to our chart a 2 degree span is 40 gusting to 60. So that's certainly something. But where we are, the isobars have widened significantly so tomorrow we show right in our area a about a 6 degree isobar now, Almost twice as far apart as they were before and that shows us gust of 15-20, and that's just perfect sailing weather for us. So as long as this low continues off to the southeast we can expect our winds to stay nice and the direction as you can see on this the directions coming south of east 6:41
Steve: So that'll be our direction which will be good kind of coming behind us. And we'll see what they predict what the direction of this low is because on the 48 and the 72 hour it'll be plotted along but experience shows that these'll move off to the east here, southeast. Hopefully and it doesn't turn around and come back over the top of this.
So that's the only thing we'll keep an eye on as we get ready to go. But we'll get another fax in an hour that'll be the 48 hour prog and then at 1:45 13:45, we'll get the 72 hour prog, and see what it is so it looks great. It's going to be a lot of wind south of Fiji. The poor people that are coming up to Tonga and are making a passage, based on this high pressure are really going to run into a lot of wind up there. And
S: Have you heard of people doing that? Are there people in tran
Steve: stepping on – This happened earlier when we came up, the very same situation happened. We were in Minerva Reef, which is southeast of Fiji, and cut our trip short because it predicted one of these lows to form. So we hurried up and got into Fiji before it formed and then the boats coming after us they I guess had resuce events of voer seven boats.

7:57

Steve: And two boats were lost and people abandoned – couple of people abandoned ship so there was quite a bit of heavy wind, caused by and it's the squash, you get a low squash against the high and it squeezes these isobars so it would be the equivalent to a big valley versus a mountaintop. And so you have again a bigger gradient they call it – a pressure gradient over a shorter period of distance and that causes real intense winds.

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S: very high tech.

Steve: It's wonderful I mean for a smallboat sailor to have the capacity to have this kind of information, is a really great safety thing as well as allowing you to predict in the old days, way before we had any of this, I mean the only weather was on the time channel, of course in those days you had a navigate with a sextant, so you listened to the radio which would give you the time ticked it would tick down the exact time. And on that station there would be a six minute weather report every hour that would tell you whether there was any major cyclones and that was it. So if there were no major cyclones and you looked out and it was sunny, you went sailing and you had no idea what was coming down the road, and in certain ways it's there's no anxiety either because you just sailed and when the wind came up you just reefed and on you went. Now there's all this with all this information we have we feel compelled to pick weather windows to wait for good weather, to be worried about things developing and so it creates a little more I don't know, stress, anxiety, that we didn't have in the old days, you just went sailing and didn't worry about it. But now that you have it, it is high tech, and it is very nice just right on a small sailboat can have this at a relatively modest cost.

S: So how much does a weather fax cost? And how much does it cost to keep it operating?

Steve: Well actually Terry, my friend Terry gave me this one because he was given it, and he wasn't using that one at the time so I've had this one now for like fifteen years. But they cost about a probably $1500-2000. And the high frequency radio is about $1500 I guess. And you can get a modem for a couple hundred dollars hooked up to your computer.

1:52

S; How bout the GPS?

Steve: And the GPS are cheap you can get a GPS's for under a hundred dollars. This one that's permanently mounted back when I bought is was probably $250. We actually have a spare GPS in the chart table. Whereas a good sextant might cost $2500 or $3000 for a - we have two

sextants on board still and we have the capacity if we lose all our electronics to navigate in the old way.

S: now what's this thing that you're holding in your hand?

Steve: Oh this is a set of dividers. And it's simply the come in different forms, and they look like the old compass you know where you used to be able to go like that and it just allows you to measure distance by again going along the right hand side or left hand side, the latitude scale, measuring degrees or minutes and then transferring it to another part of the chart

2:54

Steve: Or likewise you can take a distance like if we wanted to know what the distance was from where we're sailing tomorrow up to Nende, where we're going, let's just pick a distance like 2 degrees, that's 120 miles.. And we can mark it off. That's 1, 2 and then – that's 240 miles. Then we close down to the distance we are. And measure that. And that's just about another sixty, so it's about 300 miles from for our sail tomorrow. And that's what these are, dividers.

S: How long will it take us to do that sail under those conditions that we're predicting at this point?

Steve: Oh a little over two days. If we leave we'll leave in the morning, just we could get out here at night time, some time the night of the third day. If the winds are good we can do a 150 160 miles a day. We will be there, um tomorrow's Sunday Monday

4:04

Steve: Tuesday, we could still be there Tuesday during the day, because we definitely have the capacity to go 6 7 knots if the wind's blowing. And if we motor sail –I'm going to try to get in Tuesday, that would be my goal. Because I don't like to go into places at night time. So if we don't get in here Tuesday before dark, we will have to just have to, that is just stop, and wait for dawn I don't go into new places even with radar and GPS, it just doesn't make any sense to go into new ports at night time.

So we'll leave we'll leave tomorrow morning. And that'll give us - we'll either get up there Tuesday during the day or at the latest probably Wednesday morning.

S: Now looking at the chart between here and Lata, where we're headed to, do you see any cause for concern, that- anything that you feel like, "wow we're going to have to watch out for that when we get there."

Steve: No it's a pretty straight shot, I mean the there'll be the Tories Islands which is the northern part of Vanuatu, just to the east of our course, and but that's actually almost a break

because if something happened or if somebody didn't feel well and we needed to sstop there are a couple of anchorages on the west coast, so we could if we had to pull in but no I think generally we miss the islands we have a larger scale chart that is a chart that shows a bigger island on the whole chart.

And we will just use it as we navigate, we look at the chart, that's one of the reasons I like to use paper charts and you physically mark your course on the chart and it forces you to look to see if there's something in the way.

5:52

Steve: And these blue circles, and blue areas are shallower areas. And so you want to take a close look at what's there so you don't hit something. But it looks to me like a pretty straightforward trip without a lot of problems in the way especially if we went up the west coast it's a complete straight shot, If we come up the east coast we'll have to make a decision which side of the Tories islands to go onto. And we'll just decide that when we get up there.

S: Do you know anything about the prevailing current or the prevailing wind in this area between here and Lata?

Steve: Yes and it's shown on the charts and also we have pilot charts that give us more detailed information I'm just looking at this chart.

6:45

Steve: Doesn't have any particular currents shown on it. If you'd like me to I can pull a pilot chart out and it can show you the expected wind the average winds and the average currents for the area. Usually the ocean charts themselves will have the arrows on tehm and show you areas of current. But this chart – let me see the one that we made up – whether this shows any currents or not.

Sound of chart being unrolled.

Steve: off mic See here in the Bougainville strait. It will show you these arrows are current lines and that shows a pretty strong current here it shows 3-4 knots going in htat direction. This these marks here show there could be a ties riptides kind of thing or overfalls cause by the strong current coming through the Bougainville Channel. If you had a large scale chart of our channel here which we have, you'd see quite a bit of current

Off mic

Steve: here's a current line showing one two three four knots of current maximum coming up through the Sagon Channel. And so that's uh

S: The Sagon Channel is where we are now?

Steve: It's this channel right here.

S: Oh I see.

8:26

Steve; And then showing up here they'll generally be in the whole south pacific the whole ocean and wind moves from east west so you can expect some kind of following current, maybe half a knot, any time you're sailing, just because the prevailing trade winds are always blowing from east to west.

S: Does that ever change?

Steve: Yeah

S: Does it change north to south?

Steve: mainly then it blows westerly sometimes. I mean the Polynesians got all the way from Asia to Easter Island, not sailing easterlies but sailing westerlies, at a different times of the year, there are westerly winds and these lows that come across will produce westerly winds in certain quadrants and that's what the navigators of old were very good at recognizing weather patterns and knowing this is a period of westerlies, we're going to have three weeks of westerlies. And so we're going to take those to move in an easterly direction. Nobody including ancient mariners would take off to go east when it's blowing 30 knots out of the east. I mean nobody does that. They didn't do it then we don't do it now. So.

Tr. 13

S: So is there are there other things that you wanted to show me about the charting?

Steve: that was nothing I think we talked earlier just about how everybody seems to misunderstand the scale of a chart. And the smaller land area that's shown on a larger chart is a larger scale chart that is a harbor chart that is a larger scale chart than an ocean chart and that's kind of intuitive because people look at the big ocean and think it's a larger scale chart but that's because the scale, one to 300,000, is larger than 1 to 1,000,000. And both of those are smaller than 1-50,000, just like a fraction. So that the more detail that's on the chart the larger the scale. That was something else. We talked about the compass rose, when we choose a course, we use the chart and we put our position on the chart. And then we use a pair of I use a pair of triangles. There's various ways that you parallel lines and you draw the line that you want to do a course and then you take that line and then you go up to this compass rose which shows you the points around the compass and I'd showed you on the larger scale chart there's

a magnetic compass rose in the middle that's adjusted for magnetic variation, which right around here is about 12 degrees to the east.

1:28

Steve: Which means that 12 degrees true is zero magnetic. And so you take that course line and you put it up against the compass rose and you can read what the compass course is supposed to be for you to stay out of trouble. And that's what we do we plot a course line, we get a compass course that is along that line, and then we periodically position-fix to see how we're doing against that line because there might be a current acting on you that pushes you one way or another, off that line and you adjust your steering and you therefore try to stay on the line and if there's no rocks or dangers on the line you pick and you stay on the line, then either day or night you can rest pretty assured that you're not going to hit something our charts are very wonderful. Most of the time in most of the areas we cruise we don't have to worry too much about uncharted dangers. I'm sure up in the area where we're going that won't be the case.

Laughs

2:36

Steve: And you have to use sunlight and visual navigation so I imagine among the reef Islands and even the Duff Islands there'll be a lot of daytime, midday when the sun is relatively high so you can see the discoloration in the water.

Tr. 14

S: So how well is the pacific chart - the part of the Pacific that you sail in is?

Steve: It's very adequately charted S steps on.

I would say, all the way through the Pacific. The problem with it is it was charted way before GPS and so the GPS positions sometimes don't coincide with the chart. In other words it's been a big – the earth is not a round ball. Yet they have to come up with a round ball theory to make charts. And it's called a map datum. Which model they use to approximate a globe. And GPS is based on a datum. Some of the admiralty charts are based on a different datum. American charts might be based on a different datum French charts might be different so you still have to be careful if you're using the GPS to put yourself on a chart, that in fact they're sharing the same datum. And modern charts will tell you what correction to make to make it match your GPS. And you'll find it up on the top of these (unfurling charts, off mic) charts usually there'll be a correction that'll say for instance in this area the pilot chart will say, if you

wan to correct your GPS position to put directly on this chart you have to correct it .43 minutes east,and .23 minutes south, let's say. This must be an older chart this one I'm actually using. But that one that we were just looking at the copy this (lots of paper rustling) this is based on an Admiralty chart. And it will definitely have on it a correction.

2:02

And here it is right here it says satellite derived positions "positions derived from satellite navigation are normally referred to as WGS datum. Such positions should be moved .27 minutes southward and .43 minutes westward to agree with the chart." So when you get a number for instance of the GPS, you have to correct it before you put a mark on the chart. And what that means is when we came in the Sagun channel for instance, the position showed us closer to the reef than we actually were. And we were actually in the middle of the channel but if you put the marks directly on the chart it showed you what it is so even though the charts themselves are relatively accurate most of them were all made way before modern navigation aids, so they can still be off a mile. I've seen I've seen islands a mile out of place using your GPS, so there's just no substitute for constant visual vigilance and constant plotting. But once you get to an area

3:18

Steve: And you get to a light let's say and you correct that light for your GPS and make whatever correction that is, then you can rely pretty much on the chart to get you around.

S: Would you be willing to show me your

Tr. 15

S: sextant and - for a brief kind of - would it be hard to explain how to use it? In a sort of

Steve: well not really the sextant just basically measures the angle of a heavenly body to you that is if the horizon is straight out and you go up to a heavenly body, it's this angle right here. So for instance if something's directly overhead it's 90 degrees. If its' halfway on the horizon it would be 45 degrees. So the the sextant itself simply measures – and you can turn it sideways and you can measure angles between two points. It's just an angle measurer. Is all it does. And the system of celestial navigation that we use is actually pretty simple to understand. You go from a pre-selected position. Not where you are but let's say you do need two places 15 degrees south and 175 east. Nice no minutes, just nice round thing. You can look in a book. And that book will say if you're at that position, this heavenly body, let's say Sirius, will have an altitude of 32 degrees, which means that if Sirius is here 32 degrees let's say would be like

that. Any place on this circle, underneath Sirius, that's a come with 32 degrees, you could possibly be on that circle. Because you're looking at a star that has an altitude of 32 degrees, and any place, it's like a cone, any place on the perimeter of that cone pointing up to the top of that cone is the same angle.

2:01

Steve: so what they do is they you measure the angle you've gotten, from the angle that gives you from that position. And if the angle you've gotten is smaller that means that you are further away from the point directly underneath the heavenly body. If the angle you get is greater you're actually closer to – if you got 90 instead of 45 you'd be right directly underneath it. So you'd take that difference and you basically plot it. And instead of a circle because we're dealing with such a short distance, you're dealing with a line. So you have to first get the angle of the heavenly body at an exact time. And then you look in the book and find out where that star would be at some location near you that's a round number. And you simply compare your angle to that angle and then that becomes the difference becomes an intercept they call it. And you measure that either away from your point or toward your point, depending on whether it's a bigger angle or a smaller angle. And you plot one line. So for each heavenly body you can only get what they call one line of position. It's not enough to tell you where you are because you could be any place along that line. The nice thing about stars is you can take four or five of them at the same time and therefore you can get these lines of position to cross. And where they all cross is where you are. And so usually you don't cross directly in a point you cross in a little triangle, because there's little errors and you estimate your position someplace in the middle of that triangle.

4:07

S: What's this book that gives you

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Steve: The one that- there's two they use the Nautical Almanac, which gives you information about the position of the star, the heavenly body, and then we have tables that were worked out during the war for pilots so they could rapidly determine their position, because pilots used to use celestial navigation too, and it's called HO249. Hydrographic office publication 249. And it gives you pages and pages of numbers and you go into that book with information that you get out of the nautical almanac and you go across little things and it gives you a bearing it will give you a bearing that is the direction that that heavenly body is from this

assumed position, and altitude. And so you plot that and you compare like I say, what you actually get to that, and that ends up becoming one one line that you plot on a either directly on a chart or we actually use plotting sheets because you'd mark your chart up every day with lines.

1:14

Steve and that's basically how you do it now with the sun, you can determine your latitude by knowing the altitude of the sun at its highest. You don't need to know time to know your latitude that's why the ancient European navigators could always determine their latitude because that's the distance north or south they are. Because there's a formula you work out just when the sun gets near noon you just shoot the angle and it just flattens out and then it starts going down. And if you know what that angle is you will be able to determine your latitude. But it's longitude that has always been the bugaboo – how far east or west you are. And that required a chronometer. There's a whole story – there's a book out called Longitude that's really wonderful about the Harrisons and how they developed the chronometer in the 1860's – 1760's, but it was only till like the 1760's that we had an realy accurate – there were real long complicated mathematical ways called "lunars" that people tried to get their longitude but, the reason so many European ships crashed on the land is they they would run down their - they would get on a latitude and they would keep going until they tried to get to someplace, and so there's a whole story about the board of longitude, there's a great really interesting book written on the history of determining longitude at sea.

Tr. 17

S: So the system the non-GPS system of navigating that you use sounds like it's an amalgamation of different systems that have been put together over time.

Steve; It is itself an advanced system that's a lot easier for us than the old way. The traditional way was you'd work this all out long - with trigonometry – each site was its own trigonometric problem that you solved with what they call a celestial triangle. And it gets so complex it would take years to learn it. I was doing navigation with a sextant even before I understood what I was doing. The concept of the cone and the position away and toward and what you were actually doing only came to me slowly after a few years of doing it. But because it's kind of a cookbook situation you can actually take your site, go through numbers, go through the books, workout your position, without necessarily understanding what you're doing. But sailing used to require more of an apprenticeship.

1:12

Steve: Than it does now because there's so many labor saving devices and electronic ways that people just jump on their sailboats with very little experience and go off sailing whereas in the older days, like 25 years ago, it was too dangerous to do that - you had to sail with other people, you had to get trained, take courses in navigation.

S: So when did you start sailing?

Was that was that, when did you

Steve: Ocean sailing I started in law school I built a my first sailboat in seventh grade woodshop.

S: So I'm assuming that was more than 25 years ago.

Steve: Yeah, I'm going to be 59 this summer, so it was see, 64, probably 61. Or 60, maybe 60, or even younger than that, anyway. And I built a little sailboard for some reason I saw an article in a Mechanics Illustrated magazine. And I built this thing as my woodshop project. And then surfing started so my friends would were all making their surfboards in those days because everyone had to make their own surfboard. And we'd go off to the beach and I'd sail my little boat and they'd do their surfing, and my friends named that boat the little Stevie Wonder, I remember because Stevie Wonder had just cut his first song, and he was 12 and we were 13, and they all thought and that was my first boat. And then I built a catamaran.

2:46

Steve: A 14 foot Piver catamaran in high school. And sailed it some and then it was later in college and law school I started ocean racing and crewing on other boats. And then I got Gershon 1, a boat before Gershon 1 probably when I was 25, and had it for a couple of years, and then I got Gershon 1 and did my first ocean crossing in 1977.

S: Now who who was responsible for teaching you the navigation and your boat and your boat skills and your sailing skills.

Steve: Just experience. I sailed with other people. And the first time we took Gershon 1 up and down on the California coast we brought a real experienced sailor with us. And we put a number of years in I mean it was probably – I had ten years of ocean sailing before I took my own boat on a trip to Hawaii let's say. All with more experienced people, all with people who taught me, we took navigation classes and I was navigating on other people's boats before we took our own boat.

S: Oh so you took classes.

Steve: Yeah and then I took the classes to that taught us how to do it. And yeah just mainly experience. And then Gershon 1 was a 32 foot Lapworth designed wood boat. And I lived on her and sailed her for 18 years.

4:15

Steve: and did a lot of cruising in the Pacific went as far as Tonga. And several trips to Polynesia.

S: By yourself?

Steve: I did one singlehanded trip from Santa Barbara to Kona.

S: How was that?

Steve: That was good. I was older. I had already had 10 years of ocean sailing experience I was probably 38 or 40 at the time, and I was a little bit unsettled the first day or two, being out on the ocean by yourself, but then I got into a routine, and really enjoyed it, and the boat did really well. And read and wrote a lot. Got really connected to the ocean.

S: So when, I never really understood how people do ocean sailing singlehandedly What's

Sreve: You have to violate the rules of the road, basically. You can't keep a watch all the time. And so I would just- coming from the mainland to Hawaii you're not- you don't really involve too many shipping lanes, you come south of the shipping lanes. So I decided that fatigue was a bigger danger than getting hit by a ship. And so I would just sleep from midnight to 6 in the morning, and then I just had this thing if I ever rolled over in the middle of the night I'd jump up and look around. And I had an electronic device that picked up radar. It would set off a siren like a copbuster? And so I had something they make that for boats – and I had something like that on board that would receive signals from radar so the idea being that if a ship came

S: If another radar came in your range

Steve: Right then it would set off an alarm.

5:53

Steve: And there's just a certain, I don't know I didn't have trouble sleeping Like I say fatigue is a bigger danger than getting hit by something. But you're not supposed to the rules of the road require you to keep a vigilant lookout at all times, and all these races that have all these singlehanders are clearly violating the rules of the road and if you get in a collision with another boat as a singlehander and you're not on watch you are held completely responsible.

S: What's the what's the, what do you think is the motivation to do singlehanded sailing? Why do people want to do it? Why did you want to do it?

Steve: I - it's funny I entered the singlehanded race, the transpac singlehanded race, cause I just want- I felt I was experienced enough to do it and then, I didn't have an engine on my boat in those days and we had really rough weather getting from southern California up to the start of the race and I missed the race. And so I had I started having doubts that maybe I set that whole thing up just so I'd miss the race just so I wouldn't do it. So I felt compelled to do it just o make certain I could do it.

And I don't think I - I mean I enjoy sailing with a mate a lot more. Cheryl is much more fun to sail with. Sometimes people singlehand because they can't get along with anybody. Some people are so persnickety about their boat they just can't let somebody else do something another way, and they get in such conflict sailing with people that they have to sail alone. People end up sailing alone because they have to deliver a boat from a to b and they can't find good crew. There's the various reasons why but I think at some point people like the idea of just attaining something it's like somebody doing a solo climb. Something you're just doing by yourself as opposed to as part of a team.

7:49

S: How was it when you – how long did it take you

Tr. 18

S: to get from Santa Barbara to Honolulu? Is that where

Steve; No uh uh I came right in to Kona. It took me nineteen days.

S: That sounds very fast. Is that unusually fast?

Steve: No actually I had three days of calm weather. It could have even been 16 days. But you know the trade winds are good. Like I say I'd never gone 24 hours without talking to somebody. We had no high seas radio. It wasn't like I had sat phone and high seas radio. I had vhf radio that had a 20 mile range, and an old am radio that I could get radio mystery theater. On the radio for about 900 miles. And after that I had no human voice at all. I remember coming in to Honolulu the coast guard was coming in so I thought I had this nice sounding woman so I thought I'd just like chat her up one morning coming through the Alenuihaha Channel from the east at about 6 in the morning, So I got all excited about talking to her you know. So I was going to do the guise of a radio check. You know call in the coasts guard for a

radio check. You know say hi how are you nice morning blah blah. So I called her up and said "calling for a radio check" she goes "loud and clear" click. Laughs. No contact at all. So.
S: So much for expectations.
Steve: yeah, but I had a real interesting experience I was so in tune with the ocean, and we came down through the channel it was real windy of course. And then you hit the wind line off of Kawaihae up there. And I'd stayed up all night so I was kind of getting tired so I put up light sails and I was drifting along and I'd start taking naps. And then I'd wake up, and on one of my naps I hear the radio talking and I jump up oh god I was sleeping too long. And I wake up and the wind's come up and I just 200 yards from Keahole Point at the airport and the boat is just creaming right at the point so I say god jump up you know change course and get away and everything and then I look around I'm going to calls the guy who alerted me on the radio to thank em, and there was just nobody around.
S: what was that all about?
Steve: you tell me. It was I think some sense of something. I mean we all have levels it was I'm not a person as you heard last night who believes in too much spooky stuff but uh.
S: So you were sleeping and you heard somebody on the radio alert you.
Steve: "wake up" and I woke up. And so obviously since there were no boats around it had to be something internal and something in my body felt the motion coming off the land or something. And that's why maybe people singlehanded sail because they get so in tune with the just the natural rhythm, you know talk to other people. You can sit down and read a book from start to finish. And not get up. I read the "Zen and the Art of Motorcycle Maintenance" on that trip I just start reading it that morning, and I didn't have anything to do I read it for 20hours straight or however long it took me to to read it. I really enjoyed it I wrote a reall a lot about it. Unfortunately I later lost all the writing I did on that trip. Laughs. So anyway.
Tr. 20
S: Now, how are you doing timewise?
Which came first, the Gershon 2 or Cheryl?
Steve: Gershon 2.
S: When did you build – you built the Gershon 2?
Steve: I bought her as a she was a steel hull. Completely empty, half half you know just the hull outside was finished, and I took over the project in about 1990, and we launched her in 91, but she didn't have an interior at all just big floor and no winches, we used trucker hitches on

our halyards. Everything real simple. But I wanted to kept sailing I'd run out of money. And I had to launch the boat and start sailing it. And we put futons up on the wall. It was all just flat steel, there was none of this stuff in here at all. And one little stove we had one little camp stove we used to have an aluminun ladder that was tied up there to come down and all the foam was open there was no ceiling in it or anything. And so then over the years I just kept improving her and friends would help and finished her, so we've been sailing her now about 15 years.

S: So somebody started building her in Kona, is that

Steve: In Honolulu. Sand Island.

S: And got as far as finishing the hull. Just the exterior shell.

Steve: Right, and the boatyard the builder was concerned because the – this was a retired airline pilot. He had no real sailing experience I think it was too big of a boat for him he had no idea how big of a project it was. And then his wife got sick and their dream fell apart. And Alex, Jacobanko, who was the master boatbuilder who built it, was worried that he was going to get stuck with this boat, and so he had tried to talk me into it for awhile, cause I wanted one of his steel boats he's a great steel boat builder. And so he talked me into taking over the project and

S: now why is - stepping on – I'm sorry.

Steve: finishing it.

S: Why a steel boat? Why is there an advantage to having a steel boat?

Steve: well number one it's strong number two it's strong and number three it's strong . laughs. And it uh – there's things that on the ocean, the ocean's becoming polluted and there's a lot more junk in the ocean than there was when I started sailing

2:19

Steve; 30 years ago.

S: What kind of junk?

Steve: I mean containers, flotsam and jetsam, junk that boats throw overboard, things that could punch a hole in a wood boat. And I had a wood boat for 18 years and I would sometimes suffer anxiety that I'd be sailing along in the middle of nowhere in the middle of the night, and realized if I bounced off something it could punch a hole in the boat could sink and there I'd be. And course it never happened. And you live with that little thing in the back of your mind and I'd always just have this idea that you'd love a boat that just didn't have a

worry like that, that you could take it and reinforce 30 or 40 knot trades, and just sail her hard and not worry about it. And so I started looking for a smaller steel boat – 40 foot is what I thought I could do, and anyway I ended up with this project and - laughs. That I'm still in the middle of.

S: What do you mean you're still in the middle of?

Steve: I mean we still haven't finished there's trim all these pukas the holes all these that have curtains on em. Could all have trim and nice cane doors. And all these edges the bulkhead. I actually have milled all these - see like this trim here? I've milled all the stuff and I have all the corners and all the straight pieces to do all the edges and to do the inside of the lockers and

Fax in background.

Steve: But she's pretty finished now enough where I'm not that concerned about - it's really comfortable we consider her real comfortable.

4:08

Steve: ocean going boat right now.

S: It's a beautiful boat.

Steve: so.

S: Do we need to stop? Is there a fax coming in?

Steve: yeah there's another fax coming. Gee that was a run- on. We were

Tr 21

Steve: an hour right? Cause it's like

Cuts off.

Tr 22

Steve: koa's hard to work with and this was available a lot and I wanted to keep a matching wood this is more and none of this is stained this is all just varnished it's just a beautiful red, and the grain is real even and smooth on it.

S: Pretty.

Steve: And so we've done everything in Honduras mahogany. Now unfortunately it's harder to find as good a Honduras mahogany.

S: yeah I bet.

Tr 23

S: wow – cool.

Fax in background

So when did they come up with the sextant?
Steve: Oh it's been a development, there's an astrolabe, they've been around since the 18th century. And yhou what you do is you use these mirrors and if you have a heavenly body you end up bringing it down to a horizon. And then you read what the angle is off here. And then to do time I've got this nifty this is my little pet here it's a nifty stopwatch.
Watch being wound
Steve: and what it does it's kind of a sportswatch, and you can start it - you get to like the radio goes tick tick tick tick, at the time it will be at the tick it will be such and such a time-beep. So you start it and um then you write down the time let's say you start it at 13:52. And then you go out on deck and you're taking your sextant shot of your first star. And you get it to where it's just on the horizon and you go boom. Well you can record the time of your first shot, let's say it's 16 seconds you add it to your time but the elapsed time keeps going. So then you can go back and catch up again and do your second shot all staying on deck in the old days you'd have to run down

Someone stepping on
Steve: to the radio each time, and restart your stopwatch on another time tick. This allows you to take a number of different shots, record the time separately, and then catch up again. And so this is a neat little toy. Maybe we'll when we go out to sea we'll pull this.
S: Yeah, that'd be interesting.
Steve: If you'd if you'd find it interesting.
S: Yeah I do, I find it really interesting.
Tr. 24
S: Big piece of equipment would be hard to come by for your average poor guy out at sea. I mean if you didn't have, I mean for for fishermen, for example, was it

Stepping on
Steve: you can buy my first sextant when I cam across from Hawaii I bought a plastic sextant at a flea market for five dollars.
S: really.
Steve; And even and I have a plastic backup that I use for rough weather so I don't get this all wet. And evne there they're a couple hundred dollars now but you can you can find used

ones. I know people who sail who've never had any money, and get it together. I mean we have a friend Bruno who we've has put together a couple of boats and been able to do it without any money, or very little money and hard work.
Somebody stepping on.
Steve: you don't really need it to buy a sextant to navigate that was something that came my way from a sailor who bailed, he'd bought all the equipment did one ocean crossing and decided he didn't like it. And unloaded all his stuff. And I'd always just used plastic sextants. I mean like I said my first plastic sextant cost me five dollars, and then I finally splurged and bought one at the time that cost me $80. And then I got this to my eye it's really just an aesthetic thing, it's like any other - it just feels nice, it's heavy. It's a nice piece of equipment is all – it's smooth - it's not needed.
1:31
Steve: it's just an aesthetic thing and I was lucky enough to be able to acquire. But I've had this sextant for probably 25 years.
S: That's great. Well it's really interesting to me to hear to get a really good rundown on all of this.

END