DORY PROJECT CHAT SHEET #1:

There Really Is Another Way…..

Could semi-planing or planing dory hulls be the answer you need?

Bob Davis

You know what I hate? I hate the fact that new boats are becoming so, so expensive to buy that lots of families can no longer afford to buy one. Today it's inevitably over thirty five thousand for a pretty basic five metre boat/motor/trailer package. Crikey! And it's lots more if you want more than a basic boat. It's even worse when you look at bigger boats. Families that would like the comfort and shelter and safety of a larger boat, a pocket cruiser if you will, to really take advantage of our wonderful waterways and beautiful coast, and do a bit of cruising, simply can't afford to upgrade from their smaller boat.

As we all know, old ideas about 'total cost of ownership' or TCO of a boat – which embraces not just the cost of buying, owning, maintaining and mooring or garaging it, but also the costs of running it – have been tossed on their head in recent times by the growing scarcity of oil, and the consequent ever-rising costs of both boat building materials and boat fuel. When I bought my first boat, more years ago than I care to own up to, petrol was cheap, and diesel was even cheaper. Not anymore. When it came to motors, heck, in the old days the bigger the better, to get out to the fishing grounds faster! Today, as the world runs out of oil, boat running costs have far greater significance in the TCO equation for all boat owners. Today, even wealthy folk have to think twice about filling their big high-powered cruisers at the marina bowsers.

To exacerbate the problem, we have the big issue of global warming, and the need for everyone to reduce their contribution to that problem by reducing greenhouse gas emissions. For boating people, there are huge implications. In the realm of the majority of recreational boaters, we need to move away from 2-stroke to more efficient and smaller 4-stroke petrol motors. We need to reduce our burn rate of fuel, and produce less greenhouse gas. At a broader level, the impending greenhouse gas emissions trading scheme will inevitably drive up the costs of energy – and that is going to further increase the costs of building both composite plastic and alloy boats. Who will suffer most? Families on modest incomes will suffer most. They would love to go boating – and maybe run a bigger boat - but simply can't afford to anymore.

So what do we do – stop boating and fishing, and take up chess, video games, bowls, cards, or golf? Hell no! Far better that we take control, go back to the future, dust off proven ideas that worked wonderfully well in yesteryear – before the days of Hi-Cost/Hi-Speed modern boating – and we grasp the solution with our own hands.

I love boats. My bookshelves are full of treasures written by other people who love boats too, and who value – and have captured in writing – our maritime heritage. My favourite books on Australian maritime heritage include the works by Dave O'May and Harold Salter, and the wonderful books on the old trading ketches and fishing boats by Garry Kerr. Just flipping through and gazing at the pictures is a joy. Beyond Australian boating heritage, my bookshelves also include works out of the UK by John Leather, and the fabulous big-format books out of the USA, like John Gardner's 'The Dory Book', and books by Bud McIntosh, and John Burke – whose book on Pete Culler's Boats is worth flipping through at least twice a year – which I've been doing for years! Yeah, I know I'm rambling, but for good reason: delving back into small craft maritime heritage opens an old door to new solutions to the very problems we are confronted with today.

Here's the good news: I'm totally convinced that average families ***can*** afford to acquire and run a decent pocket cruiser! As well – I'm convinced that serious offshore anglers can acquire and run decent boats that require a heck of a lot less fuel than their current boats. Sure, people might need to re-think their ideas on "speed", but hey – think about the upward spiral of your fuel costs, and just get out of bed an hour earlier – and in so doing we can all contribute a little towards solving the greenhouse gas problem into the bargain! Ironically, I reckon the manufacturers of boat motors won't mind what I'm saying here, because I'm pretty certain they'd all prefer to sell us a new 60-90HP motor, than to sell us no new motors at all eh?

I'm going to put my own money where my mouth is, and set about proving that this can be done. This is no idle whim, by the way. Firmly entrenched as a life member of the 'average-Australians-on-a-modest-income-club', believe me - I have no desire to waste my money! For the past couple of years I've been exploring the notion of recycling great boating solutions from the past, but rendering them in ways not possible back then, able to be done differently today with modern materials.

I've come up with a concept using plywood and timber that will enable me to build an affordable, practical, comfortable, sea worthy and sea kindly cruiser. This is no dinghy either! It will be an offshore-capable and trailer-able pocket cruiser over seven metres long, able to be adequately powered by a 60-90HP outboard motor. Mine will actually start with a 90HP Mercury because…well, it's quite simple, I already have one, and I can move it from my current boat. So – and I'm *not* begging here - unless somebody is excited by this project, and offers me a new 80-90 4-stroke to demo on this really interesting project boat then, of necessity, I'll be using what I already have.

Think about what it would cost for you to go out and buy any new trailer-able 7-8 metre motor cruiser, with motor, today. The bare hull alone, depending on design and cabin layout etc, will

set you back anything between six and ten thousand dollars ***per metre***, maybe even more, and then you have to add the engine/s, a trailer and all the desired electronics – and any of the human amenities and luxuries you want. If your choice happens to be a planing hull, think about the power it will need to operate as designed – to illustrate the point, maybe a pair of 200+HP outboards? It only takes about a minute for the average family in this country to do the numbers and walk away with shattered dreams about ever owning a bigger boat. Who can afford $150K?

As I developed this idea, I set myself the goal of developing a solution that could be built by an average handyman. That was important, not just because it means that I can build the boat myself, thus drastically reducing cash-costs of the craft to me, but also because I wanted this to be something which other boating families could take on as an affordable *and achievable* project. Take the very considerable labour cash-cost element out of a boat project, and better than halve the costs of engines required, and suddenly some boating dreams can be rekindled.

A self-build boat project needs something more than merely being a way to reduce acquisition costs. The design must be demonstrably do-able for average handymen, using materials that are readily available and applying methods and techniques that don't require either a degree in rocket science or huge investments in tools and equipment.

Now, as it happens, I'm a bit more than your average handyman, with the ground-up from-scratch build of a big two storey all-timber house under my belt to prove it! As a result, my toolshed is probably a bit better equipped than the suburban average, and I fancy myself as having pretty well developed skills when it comes to working with timber. Heck, I'm not a fine furniture cabinetmaker, to be sure – but when I build a dining table, for example, it looks pretty good, it works, and you know it'll still be around and still being used a few decades from now. What I build lasts! Along the way, I've built a couple of smaller boats, including a nice 16 foot dory, using ply and epoxy techniques, and restored a few old boats, so I can legitimately claim to be a bit better advanced than a DIY greenhorn.

I've laboured this point a bit for a reason – from learning about it and doing it, I've developed a few insights into the sorts of things in a boat project that might scare off a prospective builder. For example, the first time I did a v-bottomed hull with some compound curves in its bow sections, and had to do pretty precise criss-cross laminates of strips of ply, I realised that such a job was probably beyond the interests, woodworking skills – and patience – of a lot of folk. Ditto when I rebuilt a beautiful clinker-built dinghy, requiring replacement of a couple of its steam-bent frames and two of its planks. Needing to do such stuff for a particular boat design would simply scare some people away from a DIY project.

For exactly that reason, my interests focussed on hull forms that had simple bilge or chine runs and very basic bow forms that would not require any work at all with precise fitting of narrow planking, nor any compound curves in the cladding. I concentrated on hull forms only ever requiring simple bending of sheet ply in a single plane, or at worst, twisting in a single conical shape, to form natural curves around simple, frames. Inevitably, I was drawn to the North American Dory form of hull.

That, of course, makes me no Robinson Crusoe! Far greater boating minds than mine have visited hull forms of Dory heritage, over many years, producing lovely boat designs, and very practical DIY adaptations using modern materials. Dories, and adaptations of similar hull forms, including ply-built hard chined versions of the famous Herreshoff Sharpies, and the fascinating 'instant boat' adaptations designed by Phil Bolger, can be seen in waters all around Australia. One sees a mixture of rowing, sailing and power dories on the water, small and large. Oh, to be sure, there aren't thousands of them, but there are certainly enough of them out there to suggest that some folk seem to know something that the rest of us might learn from. As is often the way with boats, it often takes seeing one, liking what you see, talking to the owner, maybe even cadging a ride, before the idea really sinks in.

People out there are achieving their boating dreams by building their own Dories, and boats with similar hull forms. Pick up a copy of the *Australian Amateur Boatbuilder* magazine next time you're in a Newsagent, and you'll see that there's a vibrant DIY boating community out there.

Long-time readers of F&B and the predecessor mags crafted by PW will recall the wonderful *Follywaffle* project undertaken by the Webster family and featured in the November 1983 edition of AB. That was a 6.1 metre Dory from the pen of Len Hedges, designed to sail, and with an inboard-well-mounted outboard motor. That was 25 years ago, and even way back then PW was worrying about the affordability of boating for average families. He was prepared to put his money where his mouth was to demonstrate that there is indeed a viable way to solve that problem: doing a DIY build of a boat with a relatively simple hull form (to make the construction do-able), and requiring modest power to move it along. And here I am 25 years on, following in PW's wake, re-visiting the same subject, for the same reasons.

As a preface to what follows, let me state clearly that I'm not a naval architect. I'm just one of those people that love water and boats, and go boating at every sensible opportunity, in boats small and large, wherever water is to be found. Sure, after doing boating for over 50 years I guess I know a little about boats, but I confess to being less than entirely tutored in the science of boat design, and happily bow to the knowledge of qualified architects who, on top of the technical science, have developed the art of creating boat designs that work – and look like they do. The latter bit is rather analogous to the difference between artisan and artiste –

great boat designers create boats that have ‘that look’, you know? They just look right. It’s truly mystical stuff, blending function and form into sweet lines.

For those who have not yet explored this path - what is Dory? The bible on this is John Gardner’s “The Dory Book”, originally published in 1978 by the International Marine Publishing Company and reprinted many times since then. I bought a copy of the 4th print way back in the early 1980s and it is much cherished. Honestly, it’s worth searching out and studying.

In its traditional form, going back to the early 18th century, the Dory was built from long, relatively thin but wide planks. Dories were distinguished from other wooden boats of their era (most of which were round bilged) by hard chines and a flat bottom across the beam, with no longitudinal keel structure – just the bottom planking that, in a dory, runs longitudinally.

General availability of thin, wide planks cut from logs, in Renaissance Europe and North America, only became possible after invention of the first powered milling saws – driven by water wheels. Using these wide planks, thin enough to bend, meant need for fewer seams, need for fewer fasteners – noting that supplies of iron nails were a bit scarce - and designs quickly developed enabling fast and economical building, using straight-edged frames, and bending of planks only to natural curves, in a single plane. Simplicity and economy were the drivers. Voila! The logical link to use of modern sheet plywood as an alternative material for dories becomes clear.

When they emerged, dories were displacement boats, powered by oar or sail, and so their bottoms were designed with a pronounced rocker end-to-end. They narrowed aft to a slender run, designed like any good modern yacht to shed the water flows created from displacement wave making. Many of them were double-enders, and the 19th century forms of dories featured what became known as ‘tombstone’ transoms.

When small internal combustion engines became available in the early 20th century, these were fitted inboard to larger dories for commercial fishing, in the French fleets around Newfoundland, off Canada, and off the north-west of USA. In some places, exactly the same types of boats – and indeed exactly the same hit-n-miss ignition engines, with lift-up prop shaft mechanisms to enable beaching – remain in use by professional fisherman. There’s a reason for that: these big dories are long proven as excellent and very safe sea boats, able to survive in very rough and often ice-infested ocean waters. You have hundreds of years of boating history around Nova Scotia demonstrating the point.

As larger motors emerged and, particularly in the years after WW2, as outboard motors emerged, the Dory hull form was adapted. In displacement mode, to accommodate outboard

motors, inboard wells were built into the flat bottoms, forward of the narrow, raked transom. But as reliable, larger powered outboards emerged, the dory hull forms were transformed into what John Gardner describes as Semi-Dories, and Flatirons. These were still built in the traditional way, using long, thin and wide planks, and they retained their forward slender entry to minimise pounding, but the aft width at the transom was widened, and the rocker aft was reduced to stop ‘squatting’ at semi-displacement speeds, or completely taken out of the bottoms in the aft third or half of the boat, enabling the dories to plane at speed.

The science of the shift from displacement mode hulls to semi-planing and planing hulls, and the issue of a boat squatting down at its rear, is very easily demonstrated without complicated maths. Next time you’re running the tap at your kitchen sink, preparing to wash the dishes, grab a teaspoon. Dangling the spoon lightly between your fingers, slowly offer its convex (underside) face to the running water and watch what happens when it makes contact – it may surprise you - it immediately gets sucked *into* the water stream. The faster you turn on the tap, the deeper and faster it digs in. If you have time, try this with an elongated desert spoon, then with a round soup spoon, and observe the different reactions, from the different shapes. Then turn the spoon about and offer the end of its concave face to the running water – as soon as the water makes contact with the angled face, the spoon is deflected *away* from the water stream.

So what? Ah – adaptation of rear-tapering rockered displacement hulls to semi-planing and planing hulls needs thought! If you don’t take out enough rocker aft, and add enough width, you’ll get a boat that gets sucked down – it squats - when you apply the power. Make it too flat and broad and you’ll get a boat that can plane, but you lose the ability to easily shed the run from displacement wave making, and you get held back, requiring more power (and fuel) for decent displacement speed – and you just might get a boat that wallows about. So you see there’s a fine balance required to produce a comfortable and efficient semi-displacement boat that endeavours to combine the lower power requirements of an easily driven and sea kindly displacement hull, and a bit more speed in semi-displacement mode when the seas are kind enough to invite it.

Fortunately, some very good boat designers have put their minds to the issue of adapting the dory hull form into good performing semi-displacement hulls, while retaining the best characteristics of big dories as excellent sea boats. A good example comes from David Roberts, for Nexus Marine in the USA, with the plans for their adaptation of the 27 feet long St. Pierre Dory, which John Gardner wrote so fondly about, for both sailing and power adaptations.

Have a look at: www.nexusmarine.com/st_pierre.html . If you don't want to build your own, but wouldn't mind a pro builder creating it for you, then the plans are very inexpensive, as advertised on their website.

A wonderful rendition of that boat, named 'Beatrice' was built by Randall Haines in New Zealand, and the owner recorded its construction process, its launch, and its subsequent successful cruising life at: www.alphabyte.co.nz/beatrice .

I stumbled across 'Beatrice' when I was doing research on adaptations of the big St. Pierre Dory, written about in glowing terms in John Gardner's book. This is a very successful example of an 8.3 metre semi-planing Dory built for cruising. Amazingly, it is happily powered by a 60HP outboard motor. ***Yes, a mere 60HP***. If you're even slightly interested in lovely boats, that website is really worth a visit. The builder did a wonderful job. The photos of the trailer for 'Beatrice' are also worth a look.

What I'm going to build is also a semi-planing adaptation of a big Dory, and while it will be different from 'Beatrice' in its hull form, its cruising layout will take some inspiration from the successful Nexus Marine semi-planing adaptation, and the build of 'Beatrice' in New Zealand. For those with bigger vehicles it will remain within tolerable trailing proportions. Importantly, it will be built in a way different from the approaches used by either Nexus Marine, or by Randall Haines in New Zealand. I love their work, but I think their approaches are suited to a professional boatbuilding shop – rather than lending themselves to application for a simpler one-off DIY build.

My starting point was a series of scale models, built successively over several years. I used the lines and offsets of the original St Pierre Dory, and suggested modifications for powered cruising, from John Gardner's book and, in a series of modification iterations, I progressed my adaptation in small trial and error increments, fiddling with amounts of rocker, and transom width, building new scale models as I went. Had I discovered 'Beatrice' a couple of years earlier, who knows, I may have opted down that path, but having developed my own ideas by then, and having explored alternative building approaches, I chose to continue developing my own project approach.

Quite early on, I decided that I simply do not like inboard wells for outboard motors. You'll need to take a peek at the Nexus and Beatrice websites to understand this bit. This is purely a personal view, but I think they add unnecessary complexity to the structure and thus to the building process – complicating things for any DIY amateur build, and they take up valuable cockpit fishing or leisure space. Besides which, my intuition suggests that deliberately building a big low-set hole and tunnel into the back of a boat simply isn't very smart.

I have visions of a gusher flooding the cockpit in a following sea! This is probably uninformed worry and irrational, given that the Americans have been safely running outboard motors in inboard wells with tunnels, in dories and skiffs, for many years - but I'm going with my own intuition on this. I also think the boat will be far more responsive to steering, with the motor back on the transom, and it will certainly steer better when reversing.

The back end of my big dory will thus be very different. It will have a low-set transom platform, aft of an inner false transom wall, which will have a lift-out but snug-seating gate. That will solve a number of problems. It gives me a wider transom rail where, in addition to my main outboard, I can also hang a 15HP outboard.

Apart from serving a useful safety function for offshore work, this will also enable me to do long periods of slow trolling, using the auxiliary – and that will deliver fuel economies, and reduce my fuel burn emissions. Both are good outcomes.

Just as importantly, the low transom platform aft will make it easier to get on and off the boat. Other than having a ladder to hand and somebody to quickly put it down, when I look at the high, narrow, raked transom and high sides on 'Beatrice' I wonder how on earth I'd ever get back into the boat if I ever happened to accidentally go over the side – or indeed, if I wanted to deliberately go over, for a swim or a bit of diving.

The building method is where my adaptation will really differ from theirs. They use a conventional approach, building the complete frame structure upside down first, before cladding it with ply. In stark contrast, I love the 'outside-in' building method used by power Dory builders such as Terry Learned, applied to build their 7.3 metre (24 feet) ply-built Pacific Dories, on the north-west USA coast.

If you do a Google search on 'Pacific Dories' you'll track him down. We exchanged letters a year or so back, discussing his approach. The centre console fishing dories built by Terry Learned, and his father before him, are full-on planing dories, with a flat run in the aft two thirds of the boat, but they only require outboard power in the 80-100HP range. For a pretty quick and sea-capable 24 footer, that makes them a very economical boat to build and operate, and certainly worth a closer look by anglers.

All I have to show you, thus far, are some photos of a couple of the scale models I used in developing my own design for the Dory adaptation I'm going to build.

I've done scale models of various lengths, from 7.3 through ten metres. As I write this, in mid-September, I'm impatiently awaiting quotes for supply of the ply, timber and epoxy stocks I need to start the construction. I love new projects, and I hate waiting around to get started!

The first of these boats will be built using external grade ply – just like they use for a lot of DIY boats in the USA. Economy and affordability are the drivers. It will be epoxy saturated, and painted inside and out. Rather than the $200+ per sheet costs of 'marine ply', A-BB exterior grade Hoop Pine ply will make a good boat, so that's where my mind is.

Model of possible layout - testing out ideas

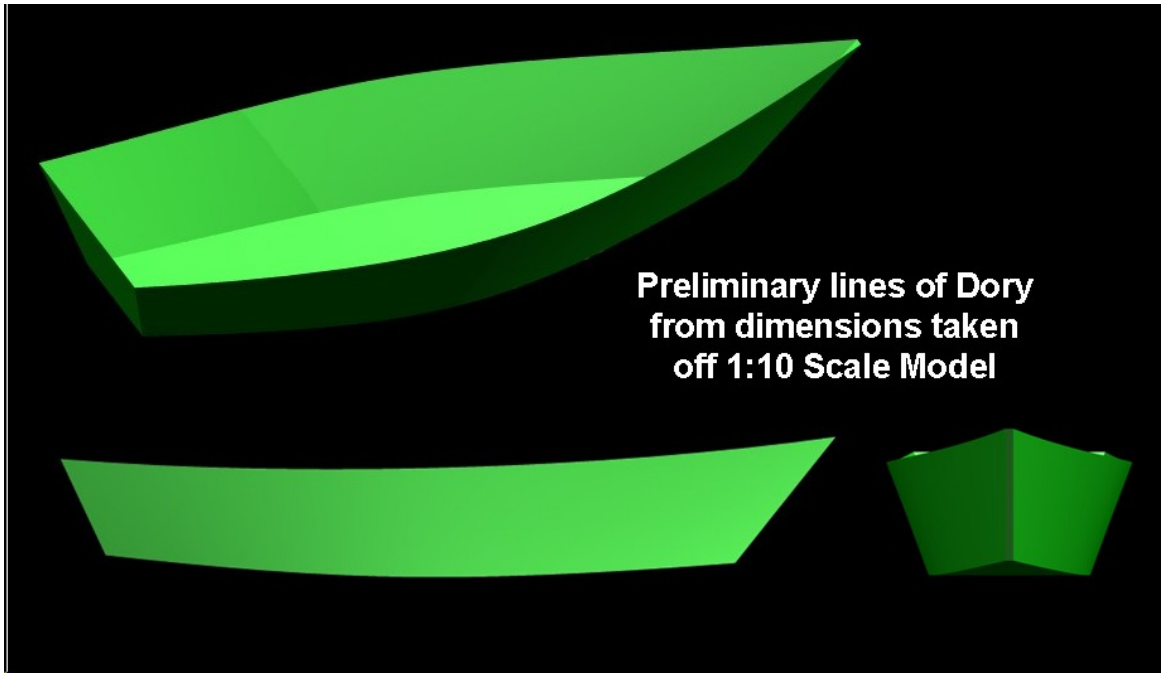
As anyone who has been in a full-on planing dory will tell you, there is a potential downside issue with dory hulls – the question of pounding, because of the flat bottom, if you drive them too hard into steep choppy seas. A traditional dory hull has no deadrise, no vee shape in its bottoms to spread the water and dampen the shock of re-entry as you come off a wave. Now, as it happens, because dories have a longish and narrow entry and great flare in their topsides extending into their bows, the expected pounding is actually far less significant than non-dory people might expect. This is particularly so in true displacement mode. But those used to the soft ride of a very deep veed boat of good design may notice the difference.

The solution? Slow down when the seas come up offshore, and run in displacement mode. Remember, a key goal is to have a home-buildable, easily driven boat that requires a significantly lower investment for its motor, and uses a lot less fuel than any equivalent sized deep-vee planing craft. The upside? For harbour, bay, estuary, river and inshore cruising work, and for pottering about in shallow water, nosing up to any beach – this thing will be unbeatable.

Anyway, by endeavouring to keep a long slender entry up front in the design, pounding is minimised. Think about this: can you imagine professional fishermen continuing to tolerate any boat that pounds them to death every time they go to sea? The St Pierre Dory has

remained in use by fishermen in the rough waters off Nova Scotia across many generations. When you're onto a good thing….

Layout of my boat will be designed for a basic cruiser – it will have a 'seven foot' forward double vee-bunk, so that tall folk can actually stretch out, a place for a Porta-Loo that's at least semi-private, the ice box of course, storage areas and a basic overnight galley. Self-draining cockpit? Heck, why not? Some of these things are actually a tad more difficult to achieve in a flat bottomed hull form that doesn't enjoy the depth of a round bilged or deep veed hull, but we will solve the problem with some ingenuity. Then there's the live bait tank, bait boxes, the fish box and rod and tackle storage.



Our goal is to complete the build within a six month timeline. Possible, sure, provided the ever-present temptation to go fishing all the time is managed, and the every-day demands on the time of this average bloke don't push things out. We'll be compiling lots of 'how to' info, from the actual build, to put together an info kit for any others inspired by our work to get their own affordable, capable, economical and eco-friendly power dory.

This 'pocket cruiser' should be sweet. Watch for the dory project space in future editions of F&B. I have a chisel to sharpen……