

Back to the Drawing Board

ISSUES & OPINIONS SURVEY



We asked:

- 1) Long ago in the pre Jon Bannenberg days it was said that there were no yacht designers; form followed the functional design of the naval architect, today the disciplines are (mostly) separate and are often also in separate companies – is this a good thing?
- 2) Does that produce more – or less – beautiful yachts?
- 3) Does cut-and-paste-able software cause originality and inspiration to suffer – or does the removal of drawing drudgery free up the time for greater originality and inspiration?
- 4) We are entering a period when new, exciting and different designs seem to be more common – is this correct? And are they driven by new types of owners with fewer preconceptions, greater budgets and the desire to make a statement and/or braver designers?
- 5) How much of the designer's role is to balance individuality of style with resale potential?
- 6) Design engineering is a key part of the process of building superyachts on time, on budget and above all profitably – the process now often takes place as a third party service to the yard; is this a benefit?
- 7) ILO will have an effect on the spaces and space allowances for crew on yachts – is this a benefit or an ill-conceived 'do-gooder' idea?
- 8) Safe manning does not generally take into account the

The drawing board has gone the way of the passenger pigeon, the dodo and other famous extinctions. Ideas may still start as sketches on envelopes or even on a drawing board (recently seen at a Dutch firm), yet today the design and drawing engineering processes rely on bytes not pencils. Despite this the criteria do not change. Nor do the complaints levelled at those involved in design and design engineering: that they fail to address the maintenance of the yacht and its equipment enough.

This issue focuses on the design process (both aesthetic, technical and indeed naval architecture) itself and the concepts and characters involved. We found – as ever – that designers, like engineers, always have a lot to say. It proved, however, well worth paying attention to whether you agree or no.

Tork Buckley

- number of crew needed, concerning itself with safe deck and engineering operations only, and not on hotel services. What is the best way to ensure that there are enough crew to offer top service as well; is this the designer's duty or the owner's adviser or...?
- 9) Are those advising the Owners generally doing enough – early enough – to offer a reality check regarding space required for crew and equipment, in order to enhance the owner's superyacht experience?
- 10) In aesthetic considerations is the need for a sound working hotel system forgotten or de-prioritised?
- 11) Pre-engineering is today the buzzword for a number of yards – as opposed to the 2D dwg and a highly skilled experienced pipe fitter; is this working financially and practically?
- 12) Some involved in such practices have had a few difficulties in getting their sub-contractors to buy into the concept causing yards to bring steel fabrication back in house. Will this trend disappear as the idea gains credence?
- 13) Are owners and designers brave enough, and using modern materials to their fullest potential?
- 14) Where great bravery of style and form is displayed does practicality get forgotten in cases such as impossible wash-down-able areas, inaccessible spaces and – as mentioned – insufficient crew to do so?

Industry Comments

1) *Not necessarily: precious few are actually pushing the envelope (as Jon did); most are either just re-hashing old stuff, or – worse – drawing monstrous things that are physically impossible. The good ones are almost all from Jon's school/offspring one way or another...*

2) *Form should always follow function – radical things can be achieved. A good design has an inherent aesthetic, and a good designer knows his/her 'golden rules' of design. Again, only a few strike it right. The best way to work is hand in hand with the building yard, so that construction standards are incorporated into the design.*

3) *Not with us (except with SL/F45).*

4) *Yes – to fewer preconceptions but no to greater budgets. The desire to make a statement has always been the case, but people were worried about the great investment and going too far out.*

Braver design is most often less knowledgeable...

5) *That's not the designer's function! The yard as main contractor should address this with the owner (carefully...).*

7) *ILO is not possible on normal sized yachts; it must be incorporated into SOLAS.*

8) *It is the yard's duty and no one else's.*

9) *This is highly subject to these people's qualities; we prefer the captain to play a central role; about half are competent enough.*

10) *No! A good designer must know about logistics (if he doesn't, he is not good).*

11) *Proper pre-engineering is the only way to control these complex projects; not doing pre-engineering is for lemons. Time must be allowed for a proper process before construction begins, and one should always be aware that concurrent design and construction is a fact of life in yacht building!*

12) *The more you control, the better the quality.*

13) *Yes, braver than we builders (because we know what can go wrong).*

14) *Yes – practicality does get forgotten in cases such as impossible wash-down-able areas, not necessarily with inaccessible spaces though and as for insufficient crew to do so – no, this is not the case.*

Henk de Vries

Feadship

Today's design is mostly undertaken by the computer. To any yachtsman who has spent a lifetime around boats of all shapes and sizes there is definitely a difference to a yacht that's entirely designed on CAD and one that has a Naval architect's eye to ensure his thought is translated into reality.

We had an architect overview every interior for construction drawing and it really makes a difference to the final product as the entire vessel flows and was viewed by the same eye. The individual sketches that were made and transferred to a CAD drawing for construction are far superior to direct CAD drawings themselves.

Any time spent in the beginning to get the design worked out prior to the beginning of construction will benefit all involved. The yard, engineers, owner and crew all benefit. The owner's representative has to be instrumental in ensuring this happens, thereby taking the potential change order scenario out of the equation.

Many people are afraid to explain all the cons to certain design characteristics and it's only after the project is said and done and in the water that the owner realises he's made a grave mistake. As industry professionals we are obliged to explain to the owners what their desires will do to the design and the running of the ship. If the crew can't clean it, it will be dirty. If the engineers can't service it, it will break. If there aren't enough (or big enough) beds, there will be a crew shortage etc...

Captain Mike Hein

M/Y Mea Culpa

From my experience in the yachting market I must say I am astonished by how many yacht builders are still using antiqued systems in designing smaller sized vessels. If we look at vessels above 55 metres the technology either in the machinery space, entertainment area, toys, galley, etc is tremendous. My experience is that, in general, technical specifications are constantly being copied and modified in accordance to a project. There are only a few looking to the future that may choose other equipment, which performs better for the new build or when at the retrofit stage.

We find a lot of yachting sub-contractors already use 3D-drawings because they deliver their systems to an even higher classed vessel, like cruise vessels or naval vessels. 3D drawings give a unique opportunity to see, on screen, where space is limited within the technical area, crew area and so on. Also it is easy to see from the very beginning where, for example, piping cross-connections will get into conflict. Draft management, stability, vibration etc... can all be handled much easier by using 3D.

The disadvantage of 3D is the additional manpower trained people needed, who are more or less not available. Also the

software is extremely expensive as well as the continuously growing data space you have to provide. Nevertheless, if you build up your sub-assembly specification you will save money like crazy near the end. As I am more on the technical side, I do recommend the use of 3D. The technical space, due to new regulations, will increase tremendously and only by using the 3D technology available will you have a chance to add all these new equipment pieces in and still keep the engine room as small as possible and service friendly!

Holger Hamann

Holger Hamann Consulting GmbH

1) Before Jon Bannenberg, the yacht was meant to represent the idea of voyage, of adventure, which was behind the concept of a yachtsman in the first instance. At that stage, yacht design was in the hands of qualified and experienced craftsmen more, rather than a subject to be dealt with by architects. In the post-WWII era, the idea of the yacht as something that meant voyage and adventure as a means of transport was substituted by a concept of the yacht being considered as a floating and moving mansion with design and architecture perfectly merged. In this new era, Jon Bannenberg's interpretation of this epochal change has been terrific: new logics of the design, led by an attentive observation of lifestyles and trends, brought all the typical dynamics of yacht design to a complete exercise of architecture.

Today, this trend is reaching a climax where the target is to split and dissociate dramatically the naval structure of the yacht, of the geometries of the structure, from the internal architecture and design. There is obviously a risk in this process. There is a risk in thinking about a yacht as just 'inside' or as the 'outside' in such separate ways, as is happening with some of the yachts which are hitting the water lately, and the distance from the naval architecture as an discipline is causing dangerous competition between naval engineering themes and architectural ones; breaking all the harmony between the two. This harmony has always been a distinctive sign of the most successful projects in the yachting industry throughout history.

2) Some are beautiful, some aren't. Certainly, more distinguishable yachts are in the water.

3) We do not believe that the computer era has limited the ability of designers and their creativity. On the contrary, some of the tools now available have opened new possibilities, and have given new frontiers, which would have been impossible even to imagine before. Designing a yacht is a very complicated process: software allows a wider emotional representation of the results of the designer's creation and we consider it no different from pencils or brushes. The outcome is just the same result of knowledge, talent and creativity

of that designer. Obviously, less talented and creative ones will cut and paste and limit their job to the minimum effort...

4) Renaissance has used 'enlightened' patrons as an excellent means to create a New Era of the Culture. It is true that big budgets do not necessarily equal great masterpieces, but we are all confident (and we are witnessing) that the best designers are following Frank Lloyd Wright's statement: "The target (of good designers) should be to represent the world as a culture and not merely represent it as something which surprises."

5) Our belief is that the owner's team should have a wise approach in giving advice and working for their Principal. This applies to every single member of the team, from the captain to the designer: they should never forget that the yacht they are building for the owner has a value that is recognised by the market. A masterpiece in terms of innovative concepts and design could be a total loss for the owner if all those innovations and concepts are not perceived as such by the market. There are some interesting examples in the industry and they should be warnings to all of us.

6) In CRN's case, on a make or buy strategic decision, we definitely decided to MAKE. We have an in-house engineering department with more than 40 engineers and we are implementing it with new experienced and highly skilled workforces in order to have as much control as possible on this delicate stage of the process.

8) This is definitely a team job. The shipyard's team should advise the best solution merely on an operational basis, while the owner's team should filter that solution with the owner's need trying to maintain the best balance between operation, hotel systems and services.

9) All too often the owner's team does not focus on crew space, storage etc early enough on. These design thoughts are normally left to the last period when all the main issues related to the specification and the building processes are

already on track and they are starting to think about the oncoming delivery and operation of the vessel.

10) Sometimes, yes. Again, this should be something addressed at the beginning by the owner's team with the designer/shipyard.

11) Pre-engineering is the only way to bring a shipyard to real effectiveness in terms of quality and profitability. This doesn't mean that 2D dwg and qualified and experienced pipe fitters are not needed.

13 & 14) Both these questions can be answered quite simply, I think: how many brave projects do we see in the water every year? We work in a quite a conservative industry, and sometimes this is often owner driven. As far as CRN is concerned we have shown our bravery quite often. This applies, for example, to the fact that we have innovated radically with Zucco International Project's support, by way of giving to clients a sea deck, opening the transom and transforming what is normally a technical area (engine room or garage access) and producing a deck where clients can relax '*piéd dans l'eau*' or work out in a gym on the sea or in a real beach club. In this case I can say that the bravery hasn't affected the practicality at all.

Design Manager Francesca Muzio and Sales Director Vasco Buonpensiere CRN Spa



1) *Actually nothing has changed. Form still follows function, but the function has changed. Today a yacht is considered to be more a floating summerhouse, so that's how it is designed. Nevertheless, a yacht still should be able to cope with the circumstances she can get into, and be a sound vessel in terms of naval architecture. As long as this is not compromised I see no problem. It does, however, mean the design as a whole has become much more complex.*

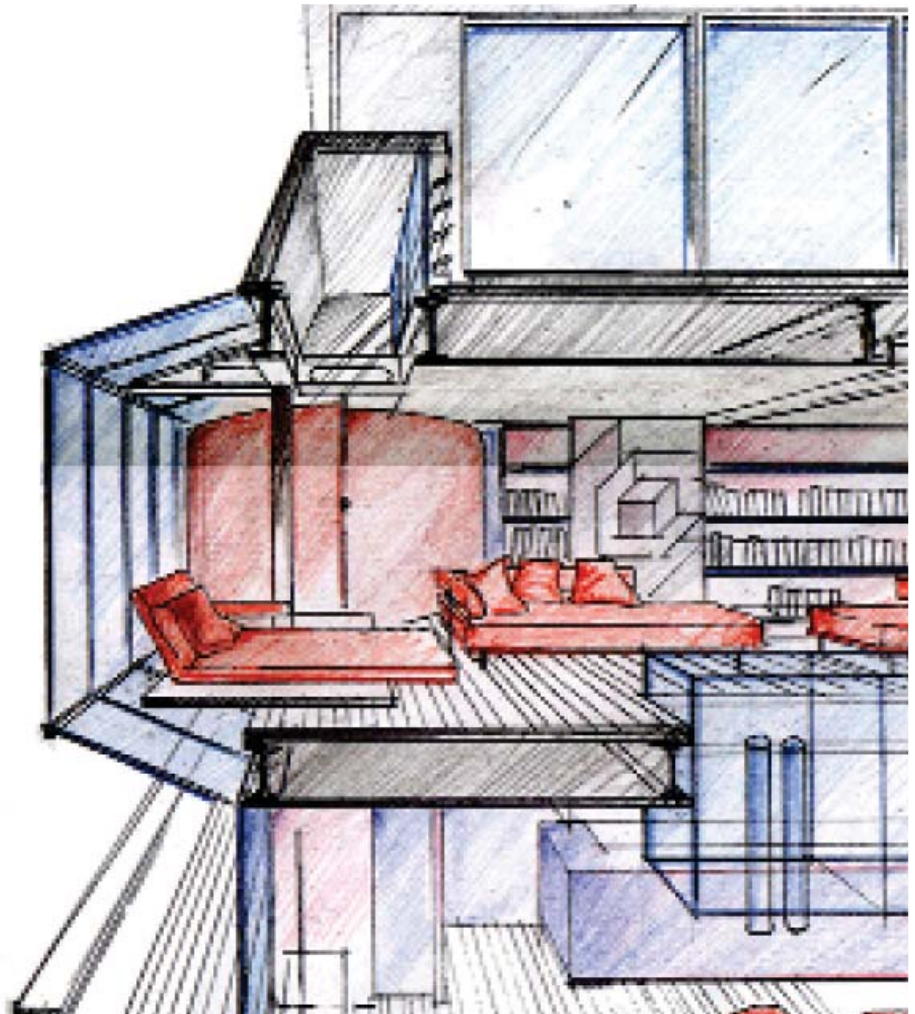
2) *It produces beautiful and ugly yachts. It depends on the owner's requirements, the designer's capability to translate these requirements into a pleasing shape and the yard's capability to produce it. I have to say that in my opinion some modern minimalist designs are merely floating versions of office buildings – not very exciting.*

4) *We do see more 'daring' designs. I believe this is driven by the trend to be different, causing owners and designers to take more freedom in the design process.*

5) *This is the Achilles' heel of this trend. It is not so difficult to be different. The key is to come up with something that is mature at the same time. Otherwise you will end up with something that is exciting today but just odd in a few years time, which will definitely compromise the resale value. It requires better designing skills than back in 'ye olde days' when most designs were based on predecessors of an already matured style and design.*

6) *I think it is. With the modern yachts' complexity it is difficult, if not impossible to have everything 'in house'. It does, however, require better project management.*

8) *It requires careful investigation of how a yacht is to be used. Is it a family yacht? Will there be parties for larger groups? What level of service will be required? The answers on all these questions should define the number and type of crew, and also how far one*



“ *We do see more 'daring' designs. I believe this is driven by the trend to be different, causing owners and designers to take more freedom in the design process...* ”

should go in consulting specialists.

9) *Hard to say. When looking at some yachts one has to say 'no'. But some owners are hard to convince...*

10) *Not that I know. In our practice it is actually getting more important all the time, and clients understand the need for such a system in order to make yachting a nicer experience.*

11) *It is a must. I have too much experience with the 'old' way where not all the piping was pre-engineered but decided by the pipe fitter on the spot, resulting in big holes being cut into carefully prefabricated interior parts.*

Today's systems are too complex; also skilled personnel, capable of overseeing a project, are hard to find relative to the number of projects under construction today.

12) *It will heavily depend on the location of the yard. In The Netherlands, for instance, where we have a lot of sub-contractors and where everything is nearby, it will work well. But in countries without such an infrastructure and where labour is less expensive, other systems may work better – it also depends on the local availability of skilled craftsman.*

13) *Although our industry involves large amounts of money, budgets for development are relatively low, unlike the car or airplane industry. Also classification societies mainly rely on proven technologies and do not accept new materials easily. So it is actually not so much down to designers and clients.*

14) *Sometimes, yes.*

René van der Velden

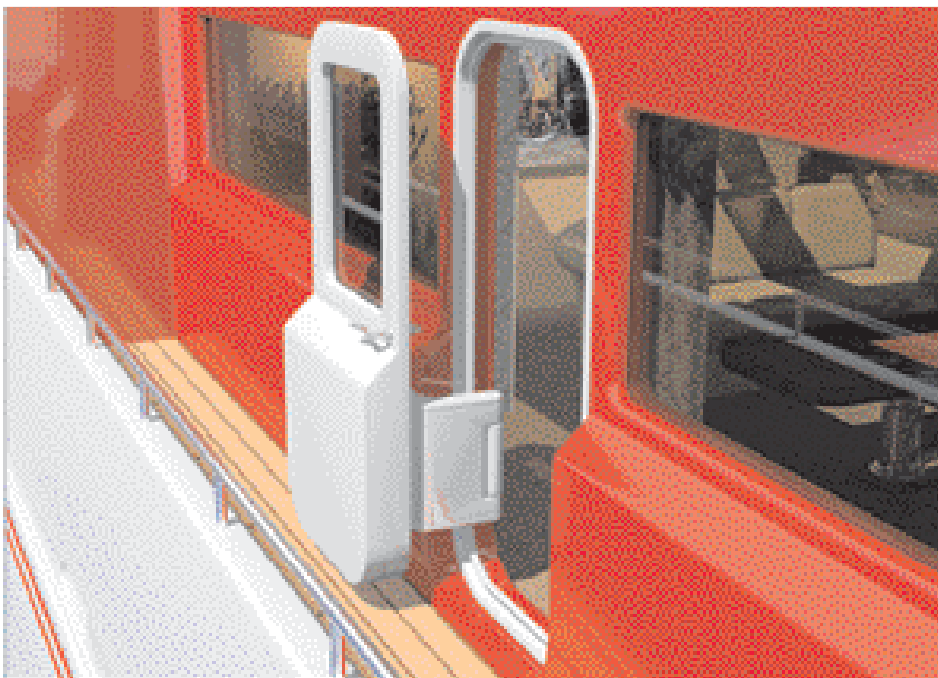
I began my career as an independent yacht designer back in 1973 when I left Jon Bannenberg's studio to start on my own. My first project was a 36-foot motor boat and there lays an indicator as to how times have changed. If one of my designers left to begin his own career today I expect his first job would be at least 50 metres, a far cry from 36 feet! Yes indeed times have changed a hell of a lot. In the '70s a yacht was considered big if it was 30 metres or so. Now a days 50–60 metres is a

'good size' and 70–80 metres is 'big' and from there on someone coined the phrase 'megayacht' or 'superyacht'. Quite simply, yachting has become seriously popular. This is driven by many factors including expendable wealth and, equally important, an ease of worldwide communication; which means that someone can keep on top of their business whilst topping up their tan. With regard to client requirements, these have grown along with the size of the yachts. Of course it goes without saying

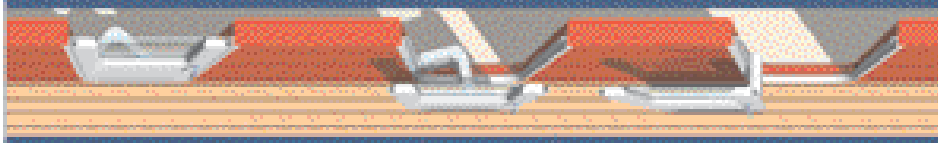
that the larger the yacht is the more facilities it is able to provide. Not all yacht owners want a larger yacht to cater for larger groups of guests. More often than not the requirement for a larger vessel is brought about by the need for spacious facilities such as a gymnasium, hair and beauty salon, spa area, massage room, swimming pool, indoor garaging for large tenders, plus a desire for a degree of privacy whereby the owner might designate a whole deck to his private quarters which would include

'his' and 'hers' dressing/bathrooms, a personal gym, massage room and an office study with a separate lounge and secluded outside Jacuzzi deck zone. We have also had requirements where the owners wanted to incorporate their own cooking space so that they could occasionally enjoy preparing their own evening meal in private without being pampered by stewardesses all of the time. Other advantages of a larger yacht include the capacity to carry larger tenders, which are often 'Venice water taxi' type so that guests can be ferried back and forth to the shore in air-conditioned comfort. The larger yachts can also offer the advantage of incorporating a helicopter hanger and possibly two helipads which enable flexibility in helicopter operations, and the bonus of being able to receive guests who might be arriving in their own helicopter.

Some might consider having a large yacht a burden as it limits the harbour ports that you can visit which, of course, is perfectly true. However, the upside is that you can anchor safely and rely on the tonnage and stabilisers to afford you with a nice stable platform from which you can visit the most intimate of ports on your 12-metre air-conditioned tender. We have a 160-metre yacht under construction that carries ten different tenders for ultimate flexibility to the guests. On one of our projects the client required a 15-metre cabin cruiser tender with below-deck accommodation for his wife and



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children so that he could self pilot them on expeditions up river estuaries and be able to fish, picnic, cook, shower and spend the night on board away from the mother ship. This kind of flexibility would not have been dreamt about 30 years ago, particularly because of safety. Now with satellite GPS systems as back up this type of trip can be undertaken without risk.

With regards to the changes in owner's requirements recent years have seen a lot of design development with the interplay between indoor and outdoor decks and large windows are becoming the norm, which is appealing to most owners. Access to the sea and tenders is now a major feature and almost every yacht built today has a substantial built-in swimming platform at the stern with grand stairs leading up to the deck. Some 20 or 30 years ago such a stern was unheard of and a large percentage of yachts favoured a canoe-style stern for aesthetic reasons and comfort in a following sea. The larger vessels can also provide sufficient structure to incorporate fold-down 'beach terrace' doors that open up the hull side for bathing or al fresco dining.

From a safety point of view recent years have seen the introduction of the MCA rules which determine fire zones, damaged stability zones, means of escape and water tight bulkhead locations. These rulings often govern the designer's creativity in space planning which would not have been the case 15 years ago when, for instance, you could have installed an open-plan stair directly connecting one lounge to another without the necessity of a steel-walled fire zone lobby to protect flame spread between the different areas.

From a styling point of view, since Bannenberg broke the mould with the creation of *Carinthia VI* there has been a steady stream of designers entering the ever-expanding industry. However, new designers don't always bring new ideas, which have given rise to quite a few yachts with features that were someone else's innovation. On the other hand, the market place includes clients who are prepared to work alongside new designers who do have radical and fresh

“New designers don't always bring new ideas, which have given rise to quite a few yachts with features that were someone else's innovation.”

ideas, which in some cases will result in yachts that are radical at concept but out of date before they are out of the shed! Such concepts could never have happened 20 years ago when the client base was more discerning.

Size is not everything and whilst there are several 100-metre plus yachts under construction throughout the world we still find clients who are shocked at the prospect of having 60 or so crew to look after them and prefer the intimacy of a smaller crew and subsequently smaller compact yacht. We also have clients who might have an unlimited budget but do not want to build a yacht any larger than 60 metres – which is the maximum size allowed to moor in St Tropez.

My own preference for superstructure styling particularly on larger vessels is more towards elegance and femininity than it is towards paramilitary- and aggressive-looking creations. Shall we say E type Jaguar versus Lamborghini Countach... My reasoning for this emanates from a belief that firstly a yacht is a feminine creature and secondly that radical styling, even on a car, dates rather more quickly than elegance.

One must remember that a yacht has a far greater life span than a car and in my view this is an essential part of the designer's criteria. It can be achieved without being mediocre; witness Bannenberg's *Carinthia VI* designed in 1971 and our own *Montkaj* designed in 1993. Both, I believe, stand the test of time. A car is created purposely to have a brief lifespan because the manufacturers want you to buy next year's model. These parameters should not apply to a large motor yacht that might take four years from design to completion.

Above all, we believe the most important ingredient in the designer's palette is restraint! We don't gild the lily or let style overcome substance! We are always conscious of practical considerations when we design a superstructure. These

play an essential part of successful yacht design. Such considerations embrace wheelhouse visibility, helicopter operations, mooring arrangements, tender embarkation, deck furniture stores, window cleaning facilities and discreet crew circulation.

From an interior design aspect we have over the years successfully steered our clients away from ostentatious glitz and more towards an ambience of a laid-back informal style. We believe life on board should be very relaxed and low key. It might be nice to dress up for dinner but the dining-room decor should not make you feel underdressed if you are wearing shorts and a T-shirt. If you have an 80-metre yacht you do not need gold taps to impress!

Another major change over the years has been the introduction of numerous specialist magazines. In 1970 only two magazines were available in the UK: *Yachting World* and *Power and Sail*. The latter eventually disappeared through lack of interest? Hence there was no reference material for budding designers or potential owners to review. Bannenberg's style library literally revolutionised yacht design. He was afraid of nothing and had the charisma to persuade the client to venture forward. His ideas were often met with initial scorn by the builder or naval architects but Jon's talent and persuasive skills always swayed them to his way of thinking. He certainly paved the way for future designers, allowing us to present our ideas to builders that Jon had already indoctrinated.

When I worked for Jon in 1970 he was the most successful and famous in his field and employed four staff. With today's work load we run at full capacity with a staff of 15 and some of my colleagues in the same industry are employing up to 30. This indicates another clear measure of the ever-expanding yacht design world.

Terence Disdale

1) We don't believe it to be separate, but more the addition of another profession: Naval architecture is a much older profession than Industrial Design. Large custom yachts are part of the inevitable "packaging" that our consumer culture has demanded. Though poised on the outer edge of consumer product when compared with a car, or electric razor, the role of design would eventually change the participants in the product/client relationships of the yachting industry. We believe their true separation would bring failure to both disciplines.

As Frank Lloyd Wright once said: "Form follows function – that has been misunderstood. Form and function should be one, joined in a spiritual union."

2) Look at the example of the locomotive

have to make a living; imagine if Bannenberg had turned down the opportunity to design Limitless because it was similar to a previous design, but notice his achievement of the design, from the higher plane of knowledge. Having designed The One he improved upon his own work.

4) It certainly appears to be the case. First of all, we can see at a glance, much more of the industry. We have access to so much more information and have become global neighbours. Yachts are constructed around the entire planet, for clients from every part of the globe. We have become a more intimate community, with a clear view of each other's backyard. This brings together a wide breadth of design briefs for a much more diverse client base, whose views are

third party enables the yard to focus on their objectives, while inviting the designer to offer fresh solutions that fit within the shipyard's abilities, thus broadening the diversity of designs each yard produces.

7) Yacht crew are the most important resource to yacht owners. Good experienced crew are becoming scarcer each year. Owners who invest in ensuring that their crews are properly looked after will benefit by attracting and retaining higher quality crews. In yacht design, managing human resources through proper space planning complements the sometimes lost focus of the human factor as part of the overall design.

8) If the designer has been given any measure of responsibility over the space planning, then it should be their duty to convey a layout



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of the American 1930s. Before and after the streamlining effort (brought on by the infiltration of industrial design into this 'function-only' industry), the locomotive basically still functioned the exact same way, but with new 'packaging' the streamlined locomotive's appearance had been dramatically improved. In this case, as with yachts, the joining of the two disciplines has produced more beautiful yachts.

3) Originality and inspiration are suffering, but not due to software. Removing drawing drudgery does free up more time for greater originality and inspiration. But will the designer choose to use the extra time in that manner? The problem with repeated or copied projects is not a battle between the mouse and the pen; it is between the mind and soul of the designer. To be fair, look at the similarities between The One and Limitless, both created by Bannenberg and urged to do so by paying clients. At the end of each day, we all

indeed less cluttered with preconceptions. One cannot ignore the universal passport of wealth, and its ability to break down otherwise insurmountable barriers. Man's journey to the moon certainly seemed impossible, but with the right amount of funding, and new creative ideas, we proved to ourselves that nearly anything is possible.

5) We believe the designer's role is to be the leader and prophet of this balancing act. Frank Gehry once said: "Architecture should speak of its time and place, but yearn for timelessness." A timeless yacht is able to convey its initial worth and value long past its genesis.

6) The shipyards shoulder the majority of responsibility for creating a safe, reliable product. This is paramount to the yard, so naturally all new ideas from within the yard must fulfil this objective first. This leads to building upon what they already have proven through experience. A relationship with a

that addresses these issues. If it falls onto the owner's adviser, then who ultimately has to control the ramifications and spatial impacts of their recommendations? The designer has to keep their eye on the overall yacht at all times.

9) We have never heard a crew member claim that their yacht has enough storage. They seem doomed to arrive late in the planning phase, if at all. Rarely have we seen their input supersede the more dramatic spaces aboard the yacht. Unfortunately, those tasked with layout are sometimes the very people with the least amount of time at sea aboard a functioning yacht, witnessing first hand what the crews' daily lives are really like.

10) If the process is about product alone, and not the additional design for event interaction, then we believe the yacht will suffer a de-prioritisation of the hotel systems. When considering the events that will take place aboard the yacht, a natural emphasis

is placed on how the design can carry out those activities.

11) Virtual construction verses a schematic is not practical without a very large initial investment into an expansive library of parts, fittings, and materials. Then the matrix has to be updatable for the countless superseded products and revisions. With regard to superstructure and structural engineering, it is now possible to have an accurate definition of the finished space. This we do find more affordable, and necessary as it safeguards against designing from a 2D planar view. The world is in 3D, but the governing bodies and construction trades still build off of print paper. 3D models help everyone see more accurately what is intended. If that is as far as the process took us, we would still need

to print and distribute 2D drawings for design execution.

12) As we better understand how to bridge the gap between the 3D information in the computer, and the skilled labour that is required to build the real thing, we believe we will see apprehension diminish. This has already begun with regards to CNC tooling for superstructures.

13) In general, we do not believe so. If they were, than *Maltese Falcon* would not have been such a breakthrough. She would have been just another yacht amongst her peers. But look a little closer, *Maltese Falcon* had all of the elements that help a project reach its fullest potential. The right owner, brave designers/naval architects/engineers, capable shipyard, and the chance to risk a

new idea. The planets sometimes do align in such a way, but too often, we in part or in full, lean upon what we know, and let someone else take those risks.

14) Yes, but sometimes the final form is worth the inconvenience. Sports cars are harder to get in and out of, and yet we marvel at their muscle and sexuality. Practicality can sometimes dampen the creative spirit that dares to design something for the sake of beauty itself. We see the compromises and criticise the lack of practicality, but we believe a common chord among all involved in modern yacht design is to see to it that these permanent objects of glimmering architecture, remain objects of desire.

Adriel Rollins

Bjorn Johansson Design

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We are currently in the construction stage of a 41-metre vessel, which we began on the drawing board two years ago. I fully agree with you that the build program for a 60-metre vessel is very organised and systematic with all of the necessary parties involved, but for smaller vessels cost becomes an issue and the client's team shrinks somewhat. This project has been a pleasure to work on, as I have been able to get in at the beginning. Many of the flaws that I have come across in the past can be worked out before a sheet of steel is cut. We started with an idea and an approximate size, 35 metres, and took it from there.

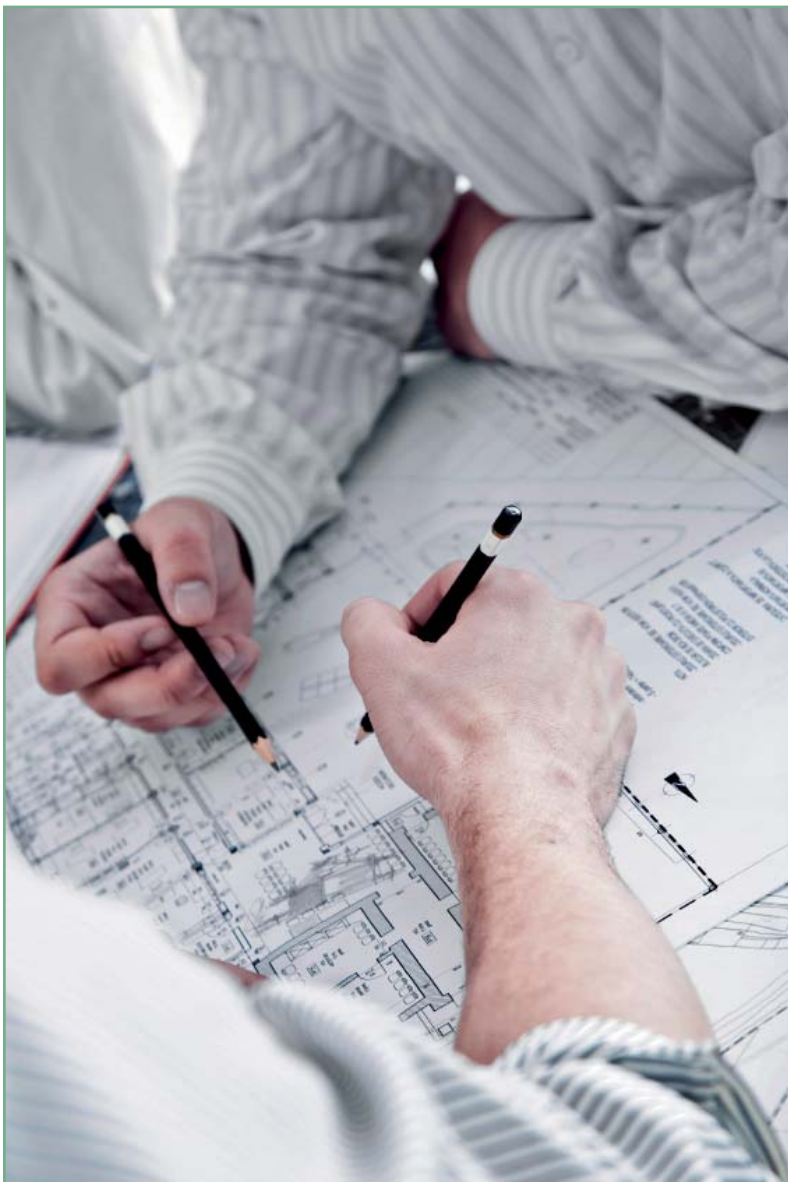
Involved with the project was the client, myself (the owner's representative) and the interior designer. The original broker was also involved at the start to advise us on some of the resale factors which we included in the design process. Generally, with a lot of vessels this size an owner's representative is not brought in until the vessel is well underway in the construction stage. This affects the way a vessel functions after it is launched because certain design issues have not been addressed in many cases. I firmly believe that you need to have someone who has run a vessel before, plus someone who has been an engineer before, involved with the initial design stages to make sure all the issues so readily found on yachts today can be circumvented.

We began with a general arrangement which was passed between the client, myself, the interior designer and the broker many times until we had what we thought was what the perfect layout. The client was concerned about the guest areas, I was concerned about the crew and engineering areas, the interior designer about the aesthetics, and the broker about resale. As we worked through this the vessel grew in size, but this was what was required to make the vessel functional. An attitude of "We have to fit this 22 feet of engine room into 18 feet" will only cause larger issues down the line. We found this to be an excellent team and the final product will definitely speak for itself. We spent some two months on ER and equipment layout alone, using 3D Rhino to get a complete overview of what spaces we have and how to get to all of the equipment for maintenance and servicing. We also looked long term, for example at generator replacement. We made sure entries were wide enough and overhead beams were in the right locations to block and tackle these out. Then the GA went down to the naval architect who re-dimensioned the vessel to fit everything in and complete the 3D hull drawings. We went on to tank testing the hull form, writing the contract and contract negotiations, writing the specifications, and now construction. I must say that the most important part in that whole process was the design stage.

Darren Nightingale

The Future of Design Today

ENGINEERS' COMMENTS



Currently, a vessel's hull and superstructure are generally designed to be stunning and innovative. Looking at the engine room and auxiliary plant spaces they are equally beautiful and fascinating, yet still dependent on a traditional infrastructure: namely diesel propulsion and power generation. Ancillary machinery are purchased and sourced externally, then arranged around the engine room in the best possible format for ease of maintenance and servicing. The best design is then dependent on the skill of the pipe welders, installers and the paint finish. As the equipment we place in this space fundamentally affects the overall design it still seems a conservative concept. The only way to bring in more design would be to look at alternative machinery. Hollywood employs "future scientists" to ensure science fiction concepts can have some scientific grounding and so they can expand their design ideas. We all see the potential for science fiction to become science fact. I wonder if, for example, hydrogen fuel cells could be a marine propulsion reality, fusing machinery together and utilising its by-products of water and heat aboard a vessel? Is it possible for superyachts to become test beds of futuristic technologies? Imagine one day you could be aboard a vessel that is not only stunning to look at but also futuristic in its operation, dead silent at anchor, no diesel fumes and the only carcinogen is a fine cigar. Can we have the future today?

Joe Hodgson

Before becoming an engineer on superyachts, I was working in several superyacht construction yards in the engineering departments constructing fire and ventilation systems and installing the bilge and fuel pipework. (I won't name the yards for fear of retribution of giving away their supposed secrets.) During this time I took the Engineering Drawing Detail Course and I discovered that in the good old days to be qualified as a Naval Architect it was a requirement to spend a year on the floor! Now having worked on many older vessels (25 years or older) it is obvious that the people that designed these boats knew what they were doing since most things in the engine room and around the boat are in serviceable positions or require little destruction to get to them. So what went wrong? (maybe it's) the introduction of CAD to the design process and the fact that Naval Architects do not spend any time on the floor anymore – so the Architects and CAD have no idea on how far a spanner swings, which makes it all the much harder for us poor engineers!

For example, during my time in the one of the yards I had the pleasure of installing the engine room ventilation fans and cowlings. On the first installation the designers made the size of the vent trunking the same size as the cowling, which was made by a fan company to their regular designs. Now when the cowling was fitted into the trunking there was absolutely no way it could

be bolted to its holding point since the trunking walls were about 20 mm away from the cowling walls, so in the end we had to cut holes in the walls from the outside to gain access to the bolts – so when this needs to be removed for service or replacement, mass destruction will need to be performed! Now I notified the design department about this oversight but this seemed to fall on deaf ears because low and behold the same thing happened on the next two builds so at this point I gave up and decided to become an engineer on superyachts instead of building them, and in this time I have seen some amazing abortions of engineering design and construction and it seems that it is not going to change in a hurry since all the construction companies seem to think that their construction process must be a closely guarded secret. Well, heads up boys, it's not a secret! All boats are built the same and in the current situation (of yards not being able to keep up with demand) it's now time that knowledge is shared so the same mistakes are not made over and over again!

So in conclusion I think it's about time the design community talk to the people at the working end on board superyachts and stop trying to cram the same amount of equipment into smaller and smaller spaces for the sake of aesthetics.

Engineer Jason Caple
M/Y Paola

Designers MUST be aware of maintenance. If they put a piece of equipment in a space, they must not merely read the spec sheets but must confer with a representative of the designer as to the requirements of that equipment. Traipsing down the clean accommodation carrying buckets of oil is rarely a good thing...and worse still if it turns out that it is part of a routine maintenance programme! A little forethought would have provided a pipe to carry oil (best solution!) or another door to the relevant space. This goes for wiring – even more so. Pretty wall and ceiling panels that are a devil to remove often get replaced in the same horrific manner. Finding a junction box or a small device hidden in a ceiling for aesthetic purposes is a horror show when all the panels are on the floor and the engineer is still cursing.

Good design makes space for wiring and junction boxes where they can be found, and leaves avenues for maintenance, which allow the work to be done quietly, quickly and efficiently without bothering the rest of the people on board.

So please...talk to people about your equipment when you design...and best still, talk to people who have to use it, not just the salespeople. Then plan for the inevitable maintenance, which will occur over the life of the vessel... and plan a long lifespan! If it's easy to maintain, and reliable, the owners and operators will keep it maintained and it will live a long life...thus the designer will be remembered fondly, not badly.

Ben Wolf

There is gloss

and there is
Jotun Megagloss

Separating opinion and fact is a black art, especially when engineering a new engine room or revitalising an old machinery space during a retrofit. As an engineer I've had to rediscover how to study concepts and drawings, and to work properly within a team, which collectively derive simple solutions for a complicated world. A yacht's engine room and the technical systems on board often take second place to the conceptual and architectural styling of the yacht. Fighting this reality leads to wasted energy and limits innovation, so sadly we marine engineers must find intelligent ways to validate our version of reality. Stylists and designers have been trained to think outside the box, revolutionise our visual and physical world. They can and do forget about practicality, physical manufacturing costs, ergonomics, system design limits, maintenance access and the total resources required annually to operate the yacht. A skilful marine engineer who discovers innovative ways to sway stylists, designers and naval architects positively will influence the engine room design, especially if they accommodate originality while retaining the necessary element of practicality.

A technical specification that accounts for physical systems and functional needs requires transverse frame number identification, physical distances from the centre longitudinal and deck level coordinates. Space utilisation strategies and accounting for all technical, functional and styling aspects of designs will reduce oversights, and correctly divides the yacht into usage areas and volumetric parcels. Each cubic metre of the vessel has high economic value and failing to allocate sufficient volume for each system, element, area and task leads to compromise as information gaps and scheduling bottlenecks magnify problems. Early experiences with warships and workboats provided me with simple design cues that helped me create a modular approach to engineering and information management. I call it the SEAT SYSTEM:

System – technical equipment and services matching benchmark and class society standards.

Element – technical and décor component configurations which produce varied functions with standard parts and designs.

Area – space usage, traffic flow and the connection or isolation of specific zones.

Task – conceive, design, approve, plan, manufacture, commission, train, operate, maintain and manage all resources within a life cycle period.

Applying this simple mantra enables me mentally to dissect a vessel, justify designs, eloquently convert opinion into solid facts and avoid wasting time justifying unfounded opinions held by myself or others within a design group. At the end of the day if you can test any design concept holistically and confirm each aspect of an idea against known standards and reality you're well ahead of the game and more likely to catch things which typically fall through the cracks.

Nomenclatures and design standards organise data in a logical hierarchy, and establishing a concise glossary specific to the yacht will reduce confusion when converting design concepts into practical solutions.

No single physical component or area is independent and so treating everything as cube will target technical space requirements. Inevitably systems, elements, areas and tasks will clash as work stations, recreational areas and accommodations consume space above, below and adjacent to the engine room. Invisible communication signals, noise, heat, vibration, magnetic fields, microwaves fill the air with energy that must be insulated against. Shielded wires, thermal insulation, vibration mounts and the separation of conflicting apparatus are crucial design criteria often misunderstood and overlooked. Religiously tie everything back into an equipment list matching the vessel's general arrangement drawings and apply work groups that account for every step.

SEAT Work Group concept

I. Administration and supervision

II. Certificates, documents and publications

III. Crew training

IV. Critical systems

V. Deck machinery and equipment

VI. Electrical and electronic and systems

VII. Hotel and entertainment systems

VIII. Main machinery systems (auxiliary)

IX. Monitoring, automation control and alarm

X. Navigation and communication systems

XI. Propulsion, manoeuvring and ride control

XII. Zones and deck levels exterior

XIII. Zones and deck levels interior

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I had a literal breath-taking experience on an Italian built mega sailing vessel on departure from Monaco. I had been testing the engine room air lock and fire dampers prior to sailing. With astonishment I noticed on the computer at the engine room controls that all tank levels were going up at the same pace as the engine revs and the engine room doors could not be opened as they were being sucked closed against their watertight seals. I realised that I was competing for air with the engines and generator and as the revs increased the turbo team was liable to win. I made a hasty call to the wheelhouse with my hand-held VHF to slow down the engines and we were able to continue on our way with a watertight door open. One tiny fuse had blown and every flap and valve in the system had closed! 'Fire and weather air lock system was pressure

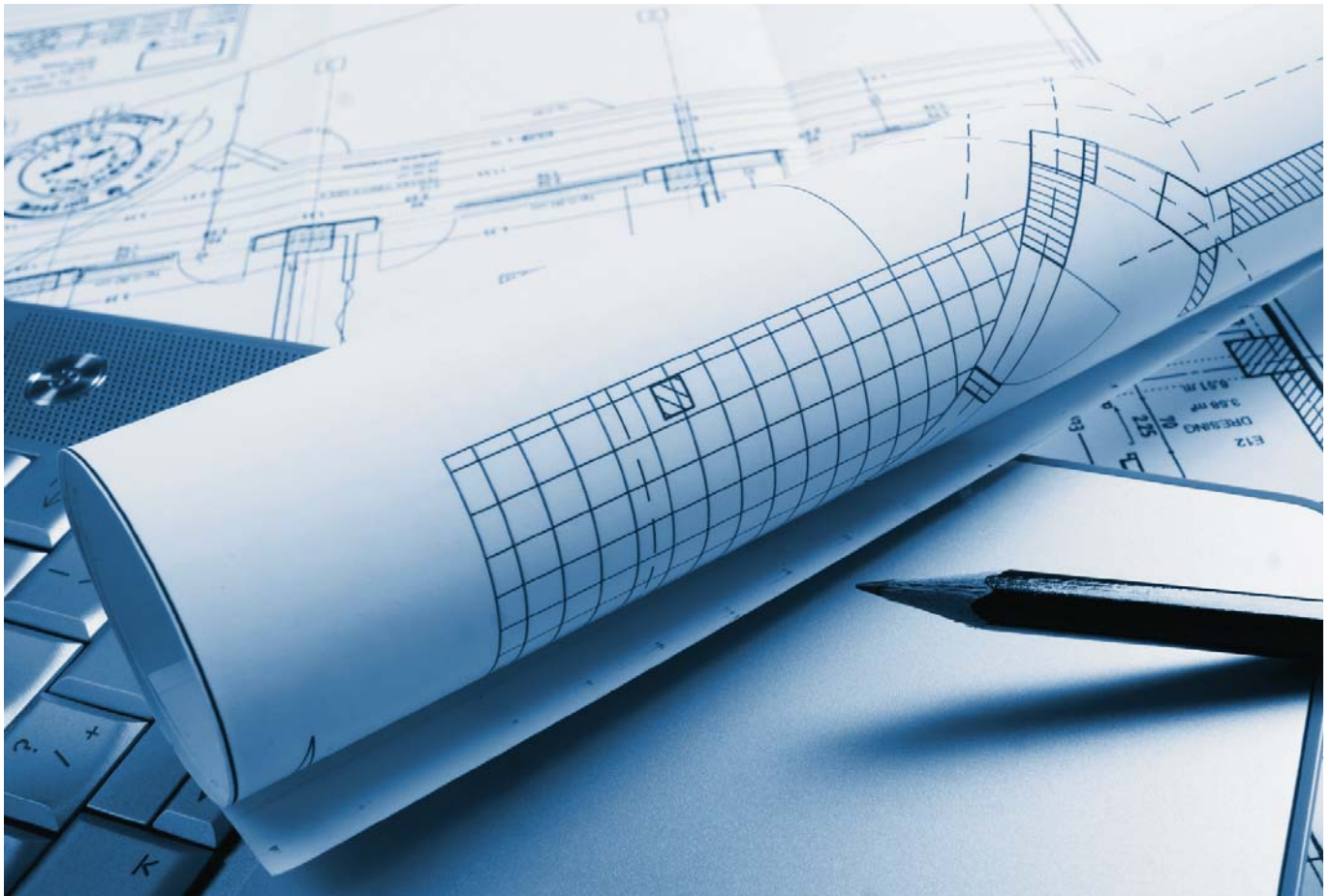
“ So please...talk to people about your equipment when you design ”

tested', was entered into the log book. I made sure that when I made the call on the VHF that I was as far as possible from the generator switchboard as a little sign above the switchboard stated, "DO NOT USE VHF NEAR HERE AS IT CAUSES BLACK OUT", which is so handy on a boat.

Never had these problems on steam ships.

Mike Grant

Images: istock.com



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