

3 Discussion with Dott. Ing. Giulio Gennaro

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[The following collection of mails is essentially as exchanged, misprints have been eliminated as well as some passages, considered to be irrelevant and/or confusing.]

Date: Thu, 23 May 2013 17:47:41

Subject: Meta-convention: limited micro-universes, cont'd

Dear Prof. Schmiechen

I perfectly agree with you when you say that if we are considering the 'limited micro universe' of current standard sea trials practice, well, to ask for more than you have engineered and documented is to ask for the moon.

I am now focused on what could be achieved with better thought and carried out sea trials, still within a practical approach.

E.g. I find it unlikely that thrust can be readily measured on-board, therefore I discount it, while I know that sea state can be readily and reliable measured, so it could be easily incorporated.

The fact that your peers try to discount your approach is clear, the reason behind it is clear: money, their money in particular!

Kind regards,
Giulio Gennaro.

Date: Thu, 23 May 2013 13:09:35 +0200

Subject: Meta-convention: limited micro-universes

Dear young colleague,

many thanks for your further affirmative statements. 'But' your mail inspires me to my last response, to a statement of my 'final', call it my meta-convention, before we shall set out for our trip to Weimar tomorrow morning.

In case of traditional 'steady' trials my well-defined micro(!)-universe of discourse has from the beginning been purposely limited to trials as usually performed, not including any decent thrust measurements, not including any decent logs, not including any decent observation of the sea state. Anything else is unrealistically

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asking for 'things', which may be or even are definitely unnecessary, as I now know for sure!

Whenever I am 'presenting' a paper on a well-defined micro(!)-universe of discourse, my 'peers' do not discuss, what I have achieved in my well-defined limits, but they talk about what else 'needs' to be done, what they should have done, but did neither notice as a problem nor solve within their hopelessly inadequate conceptual framework!

And discussions at the IfS Hamburg always (!) ended with statements on what I could not do. Usually I came back the next year having solved the next problem. Particularly interesting examples have been my design and tests of an energy wake adapted ducted propulsors without ever mentioning the concept of thrust, also historical now and also not yet acknowledged!

Continue to dare and care to think yourself! Sapere aude!

Yours, Michael Schmiechen.

PS. Concerning your last question, I have been referring to a misleading header of a plot, and maybe others. No problem, just corrections necessary sometime!

Date: Wed, 22 May 2013 23:58:07

Subject: More pragmatism!, cont'd

Dear Prof. Schmiechen

I agree that, in lack of better knowledge, one can use a limited number of measured parameters and simple equations and be able to get meaningful results.

But, at the same time, whenever possible, a combination of more parameters and less complicated equations can be used. The goal might not only be to reconstruct the ideal no-wind-no-sea condition, but to get a more comprehensive evaluation on the actual effect of the environmental conditions on the propulsion.

By conducting 'long' sea trials, at different speed and along different headings, it would be possible to test different axiomatic equations for wind and sea and select the ones that give the lowest residual, and then compare them, for instance, to safekeeping results or with wind tunnel results. The goal in this case, is not just to obtain a rational and meaningful interpretation of the sea trials, but to check the modelling of different phenomena.

Of course, the lesser measurements are taken the more simple must be the form of the axiomatic equations. In this I perfectly agree with you.

I do not get why I would not like the nominal no-wind-no-sea condition, I have lost you there.

Kind regards,
Giulio Gennaro.

Date: Wed, 22 May 2013 21:48:31
Subject: More pragmatism!, cont'd

Dear young colleague,

if you continue the line of this morning's thought and apply it to environmental conventions, you will notice that any (!) function of the hull speed through the water and of the relative wind speed in forward direction resulting in residua in the confidence range 'does the job'!

And my very crude function 'happens' to have done the job many times, maybe not perfectly due to the crude wave observations as explained, but acceptably! Thus there is no need for fancy seakeeping theories and measurements of wave spectra. And thus another piece of professional superstition goes down the sewer!

I am assuming that trials are usually carried out against the waves. In my Mathcad file I have seen a mistake in the header of one of the plots, referring to the 'no relative wind condition'. This is wrong and this mistake may be met in other headers, to be corrected occasionally.

It is the 'nominal no wind and waves condition' I am referring to and which you do not like. The point you have raised has also been raised by Dr. Wagner, but again I wonder what you are talking about? In face of the crude data available the simplest possible rule does the job of an acceptable convention, or just a reasonable job, if you like!

More sometime later next week as we shall be visiting Weimar for some days.

Yours, Michael Schmiechen.

Date: Wed, 22 May 2013 10:49:02
Subject: More pragmatism!

Dear young colleague,

of course there is no need to distinguish between equivalent current 'laws' unless you have other purposes, as I had in case of ANONYMA, the need to extrapolate explicitly stated!

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Another piece of professional superstition down the sewer!

More maybe later during the day.
Yours, Michael Schmiechen.

Date: Tuesday, May 21, 2013 9:17 PM
Subject: Common ground reached!

Dear young colleague,

many thanks for your detailed response.

Now we have established common ground, not the stupid 'level playing field' Henk van den Boom is talking about in the subtitle of his paper. Only two remarks for now.

I have used the term 'flow meter' generically, for any means other than mine to measure the current, including those you mentioned.

As I have explained in detail in my draft the residua are not sufficient to decide on the current model. In case of the ANONYMA the linear model and the tidal models happened (!) to result in nearly exactly the same current and residua within the confidence range.

For that reason I have explicitly stated, that additional information is necessary for the decision on the model, if different models result in residua in the confidence range; see page 31, line 5 thru 13, and the figure on page 32).

With kind regards yours,
Michael Schmiechen

Date: Tuesday, May 21, 2013 3:55 PM
Subject: Further comments, cont'd

Dear Prof. Schmiechen

thanks for your kind reply.

MS: With my axiomatic models of the propeller and the current I am not only precisely defining, 'constituting' the meaning of the concepts of the propeller in the behind condition and of the current, respectively, but providing methods to identify their values. Naval architects may like or not! And nobody can be surprised, that my procedure always works, on model scale and on full scale, even under severe service conditions, when all your fancy flow meters, if any, are doomed to fail!

GG: I perfectly agree that an axiomatic model of the current, by forcing the value of the current, can be of extreme help in making sense in data that, without the use of axiomatic model, would be of little use if any I never doubt it and I used a similar model in the past to criticise the extremely biased and unprofessional evaluation of sea trials / service records made by several shipping company and consultancy firms.

MS: As soon as you have understood this, you will know that it is hopelessly unprofessional to continue talking about flow meters that cannot be calibrated accordingly! As I have explained this is as unprofessional as inventing thrust meters that cannot be calibrated.

GG: I have perfectly understood the above. Please note that I am not at all talking about flow meters, and I have no idea where you got your impression that I was talking about flow meters. As a matter of fact I despise any kind of flow meters and I deem that any engine monitoring based on measuring FOC by means of flow meters is doomed to fail.

MS: Similarly with my extremely simple thrust deduction and wake conventions I am not only precisely defining, 'constituting' the meaning of the concepts of resistance and wake, but also providing methods to identify their values. Naval architects may like or not! That is exactly what Froude did, but I have understood what he did and I have rationalised his procedure already in 1980 and demonstrated in 1988 how it works full scale.

GG: Understood.

MS: The tidal model does not work in the ISO example, as a typhoon 'happened' to disrupt the trials! So the whole example is basically inappropriate, unless analysed in great detail as I did in case of the ANONYMA with the propeller ventilating up wind. But my first crude evaluation in 1998 already demonstrated that the whole ISO method is inherently 'wrong'. But nobody reacted at that time!

GG: I perfectly agree about the faults intrinsically built inside ISO method. The fact that a single axiomatic model for the current cannot be always right is not a criticism to your method, but a fact. In principle one should use the equations that results in the smaller residuals.

MS: This is what I call irresponsible! In fact all the colleagues involved have seriously damaged their own reputation. And exactly that happens again with all those following 'the emperor in his new clothes'.

GG: I perfectly agree with you.

Kind regards,
Giulio Gennaro.

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Date: Tue, 21 May 2013 11:27:04
Subject: Further comments, cont'd

Dear young colleague,

your first two mails have been fresh and to the point, but the later ones are a mess, and now I notice that you did not understand what I am saying. Before repeating my whole paper I suggest you read it from the beginning, sentence by sentence! And try not only to understand, what I am saying, but also to draw the conclusions!

With my axiomatic models of the propeller and the current I am not only precisely defining, 'constituting' the meaning of the concepts of the propeller in the behind condition and of the current, respectively, but providing methods to identify their values. Naval architects may like this or not! And nobody can be surprised, that my procedure always works, on model scale and on full scale, even under severe service conditions, when all your fancy flow meters, if any, are doomed to fail!

As soon as you have understood this, you will know, that it is hopelessly unprofessional to continue talking about flow meters that cannot be calibrated accordingly! As I have explained this is as unprofessional as inventing thrust meters that cannot be calibrated.

Similarly with my extremely simple thrust deduction and wake conventions I am not only precisely defining, 'constituting' the meaning of the concepts of resistance and wake, but providing methods to identify their values. Naval architects may like this or not! That's exactly what Froude did, but I have understood what he did and I have rationalised his procedure already in 1980 and demonstrated in 1988 how it works full scale.

The tidal model does not work in the ISO example, as a typhoon 'happened' to disrupt the trials! So the whole example is basically inappropriate, unless analysed in great detail as I did in case of the ANONYMA with the propeller ventilating up wind. But my first crude evaluation in 1998 already demonstrated that the whole ISO method is inherently wrong. But nobody reacted at that time!

This is what I call irresponsible! In fact all the colleagues involved have seriously damaged their own reputation. And exactly that happens again with all those following 'the emperor in his new clothes'. I am looking forward to the 27th ITTC. Even if I should not be invited as a senior delegate, I shall be at Copenhagen, only a very short trip from Berlin.

So much for this morning, as always (still) in a hurry

yours, Michael Schmiechen.

For ready reference I again quote the plot of Anderson's archetypal tale:
"A vain Emperor who cares for nothing except wearing and displaying clothes hires two swindlers who promise him the finest, best suit of clothes from a fabric invisible to anyone who is unfit for his position or 'hopelessly stupid'. The Emperor's ministers cannot see the clothing themselves, but pretend that they can for fear of appearing unfit for their positions and the Emperor does the same. Finally the swindlers report that the suit is finished, they mime dressing him and the Emperor marches in procession before his subjects. The townsfolk play along with the pretence not wanting to appear unfit for their positions or stupid. Then a child in the crowd, too young to understand the desirability of keeping up the pretence, blurts out that the Emperor is wearing nothing at all and the cry is taken up by others. The Emperor cringes, suspecting the assertion is true, but continues the procession." Italics: MS.

Date: Tue, 21 May 2013 08:05:15

Subject: Further comments

Dear Prof. Schmiechen,

thanks for your kind email.

I will wait for your comments to my letter, as to amend it in a suitable manner.

As far as the ISO example I just wanted to know if my final results were comparable to yours.

I have noticed and in the case of the ISO example the cubic polynomial for the currents give small residuals, while the tidal model results in high residuals.

As far as measuring the hull speed through water: I agree that it cannot be feasible with flow-meters / speed-logs and the like. But it is feasible with other instruments, in particular with radars. In principle the accuracy on the measurement of current is ± 0.2 m/s and $\pm 5^\circ$.

A similar situation is present for the measurement of the sea state.

I agree that in case of a correlation between wind and waves the correction for wind and sea becomes coupled, but this is not always the case, e.g. in case of swell being present.

In addition I understand the influence of the wind is more or less symmetric, while this is not the case for waves and sea, as the behaviour of the ship is the same for ahead or following wind but it is different in case of ahead or following seas.

In order to explore wind and waves behaviour and to decouple one from another it would be interesting to analyse runs made not in just two opposite direction, but

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encompassing more direction (e.g. 45° intervals). This is a problem with current practice, that requires a more or less 'steady' speed to be reached, it would much less of an issue in case of instantaneous readings.

Kind regards,
Giulio Gennaro.

Date: Mon, 20 May 2013 20:48:29
Subject: Many thanks for your 'final' approval

Dear Dott. Ing. Giulio Gennaro,

many thanks for your numerical exercises and your 'final' approval.

In the first case I do not know what to comment on and I certainly will not try to do this tonight. I know that Excel is a popular environment, but for my purposes it is quite inconvenient. What are your findings beyond those you already mentioned?

Concerning your 'better' and more elaborate reply I shall make a number of suggestions tomorrow. For my taste it needs a better structure and to refer to my statements.

If I state explicitly that it does not make sense, that it is unprofessional, to measure the hull speed through the water by some flow meter, you should not tell me that it is possible. Forget it! Dr. Wagner also tried again and again to tell me the same story. Most of your comments in your mail are of the same type.

Dr. Wagner was also quite unhappy with my joint treatment of wind and waves. But I have shown in an appendix and explained at length that the relative speeds of wind and significant wave have been strictly correlated in case of ANONYMA, and they usually are so in other cases, that their effects thus cannot be separated, the problem being singular! So what are you talking about? If you have more information please use it!

For this evening I stop here and maybe I simply send you an update of your remarks and together my reply, if necessary. Before your mail arrived I had just had re-read my draft sentence by sentence again and I feel that all your questions have already been answered. Admittedly my style is peculiar and the sentences are so densely packed, that nearly each of them is a paragraph of its own.

With many thanks so far
yours, Michael Schmiechen.

Genoa, 20 May 2013

Dear Prof. Schmiechen,

It was a pleasure to receive your draft of a paper about the rational evaluation of sea trials and model test. In the following I express some comments on the matter raised in your draft paper.

First of all it should be clear to most of people working in the shipping business that the subject of model testing and sea trials is indeed still much too obscure and there is an urgent need to shed some light.

This matter is made even more urgent due to the introduction of regulations by IMO (e.g. EEDI, EEOI, SEEMP) which should require scrutiny and monitoring of the propulsion system which, by itself, represents the largest energy consumer for the vast majority of the vessels.

Of course without proper and sharp tools any attempt to monitor the propulsion system, and in particular the performance of the hull and of the propeller, is doomed to fail. The good (or bad, depending on the point of view) is that probably few will notice the failure. Ships sail on paper, sadly, and as long as the paperwork is done, most will be content.

One of the first point you raise is the necessity to discriminate between what can and is measured and what cannot or is not measured, and in particular you point out that without a reliable measurement of the current any attempt to judge the propulsion performance is futile. I completely endorse your view.

Nowadays it is possible to measure current in a reliable way, albeit, to my knowledge, this is very seldom done. In this respect it should be recalled that most operators prefer to discard completely the Speed Log, due to its intrinsic unreliability, and decide to use the Speed Over Ground, uncorrected. Another big concern is the objective and reliable measurement of the sea state, as per the current the possibility is present, but seldom taken.

Another important point is that the evaluation of sea trials must not refer to model test in any way, sea trials are needed to evaluate the performance of the vessel and to validate, so to say, the model tests. To mix sea trials and model tests has the only result of impairing the possibility of an unbiased comparison of the two.

In my opinion the use of axiomatic equations, as per your proposal, goes in the right direction of completely separating the model test with the sea trials and of establishing a fair and unbiased ground for comparison.

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In particular it is clear that the propeller can (and in principle must!) be used as a measurement device: ...

Moving the focus from sea trials to model tests further comments arise. I concur that the entire notion of open water testing is devoid of any meaning. The propeller must be investigated 'in behind' conditions, conditions for which it is (should!) be designed and in which it will be operated. Therefore testing in open water is testing in an extreme off design conditions.

A final remark about confidential and sensitive data. A lot of people use the above just to frustrate other's effort. Data, even the ones that are truly sensitive, are such as long as they are complete, take the name tag away, make the vessel unrecognisable, take away the superfluous data, and 99% of the confidentiality / sensitivity goes away. The problem is that too many people are jealous of their data, and they envy the curiosity of the colleagues. So they obtain their small revenges by refusing to share what they have.

Business is business, even when scientific in nature. If one does not have access to the data one is harmless, or far less dangerous. The above can be easily seen when attending conferences: most of the people are advertising their own success, very few people actual share knowledge and data. It is sad and bitter, but it is the nature of the man.

In conclusion I congratulate for the interesting and 'hot' draft paper. Probably too hot to be handled for many reviewers.

I share your views and concerns.

Kind regards,
Giulio Gennaro.

Date: Monday, May 20, 2013 7:21 PM
Subject: Many thanks for your approval, cont'd

Dear Prof. Schmiechen,

please find herewith attached a better and more elaborated reply to your draft paper. Please, let me have your comments. Feel free to publish it on your website if you like.

[I have copied the formal letter and deleted only few 'irrelevant' paragraphs.]

In the mean time I have taken the liberty to work on the ISO example, here with attached, for your review.

in the same file I also copied the data for the sea trials of two sister vessel, for which I kindly ask your comments.

A further comment. I do not know what 'form' you use for the equations needed to model the influence of the wind and of the waves as the incidence angle changes.

What I mean is that we can write:

$$P_{\text{wind}} = q_1 |v_{\text{rel}}| V_{\text{rel}} V_g$$

$$P_{\text{sea}} = q_2 H^2 V_h$$

but the coefficient q_1 and q_2 are not constant for all incidence angle, and on that I think that some additional axiom is in order.

In addition I find that

$$P = (q_0 + q_1) V H^3$$

is too restrictive.

In principle, by analysing model tests, sea trials and the like I have found that either of the two following equations are more apt to describe the power vs speed curve:

$$P = A V_h^B$$

or

$$P = A \exp(V_h B)$$

Kind regards,
Giulio Gennaro.

Date: Mon, 20 May 2013 11:26:40
Subject: Many thanks for your approval, cont'd

Dear Prof. Schmiechen

I kindly ask you to refrain from publishing my last email.

I will write a more comprehensive comment, if you like not just a quick e-mail full of misspelling.

I am currently going over your analysis of ISO example (albeit I lack some input data and part of your output is missing).

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I am also applying your method to a couple of cases of my own.

The first comment is that the output is consistent, which is a major success.

I also note that, in principle, sometime the tidal model gives very good results, some time not so good, in that case, in principle, the polynomial model of the current allows to 'solve' the current.

I will send my 'good' comment in the next few days, together with some more detailed questions and considerations.

Kind regards,
Giulio Gennaro.

Date: Sun, 19 May 2013 13:35:36
Subject: Many thanks for your approval!

Dear Giulio Gennaro,

many thanks for your prompt response, the first substantial discussion of my draft, and in fact a professional approval of all my statements. If you do not mind I will put it on my website immediately and later publish it together with the final version of my paper.

After having mailed my letter to many colleagues I have sent additional explanations where necessary and addressed further individuals. A mailing to all members of the three ITTC Committees concerned with the subject is ready to be sent.

Apart of my intense correspondence we enjoy a wonderful Whitsun day here at Berlin.

With my best regards yours,
Michael Schmiechen.

Date: Sat, 18 May 2013 23:38:05
Subject: Future Ship Powering Trials and Monitoring Now!

Dear Prof. Schmiechen

I have read your paper with great interest.
I will re-read it with greater focus and paying attention also the various attachments.

I concur with most you have stated.

Let me state here below some comment of mine, in a disordered and incongruent fashion, I beg your pardon for that.

I find absurd that one states that the quality of model testing has an influence in the assessment of sea trials. The two matters are and must be totally separated. To mix the two matters implies to rendering the entire comparison meaningless. The fact that IMO and ITTC apparently endorse such statement goes a long way in assessing the usefulness of the two institutions.

I also agree about the fact the open water tests are totally useless, as one is interested in the 'in behind' efficiency, for which the propulsor is designed, not in the 'open water' efficiency, which is a completely off design condition.

Another matter of interest is the wake. The relative rotative efficiency should, at least in principle, represent how well the propulsor behaves 'in behind' in respect to the 'open water' condition. Of course, due to the different 3D wake (I underline 3D, i.e. wake distribution on the propulsor, not just average wake) between model and full scale, it goes without saying that the relative rotative efficiency should change going from model to full scale. On the contrary is kept constant!

Moreover the BIG problem, at least from the propeller designer point of view (which, I beg your pardon, is my main concern), is that model test facilities are totally uninterested in providing an estimation of the full scale 3D wake. So we end up testing (and more often than not designing) propellers in model scale 3D wake instead of the full scale wake in which they will operate.

I have never, I repeat, never experienced a model basing advising about 3D full scale wake, they are perfectly happy measuring the 3D model scale wake, once done that they consider their job done.

Even though the difference might be small, the conceptual problem is huge!

I agree about the need for an accurate, reliable and repetitive measure of the current, VC, without it any consideration about powering of the vessel is rubbish! As a matter of fact nowadays the speed of the surface current can be measured directly with good confidence and reliability, albeit very few, if any, do it during sea trials.

I also agree about the wicked meaning given to 'steady' conditions, often average conditions being considered representative of steady states, which are not steady.

Today is it also possible to measure with good reliability the sea spectrum (not just the sea state by means of an equivalent BN), however, just as in the case of current, the largest majority of the concerned parties neglect this matter.

I also concur about the false confidentiality of the data. I find totally unscientific that data, once deprived of the 'name tag', are not freely distributed, blaming it on false confidentiality issues.

E.g. we are working about the extrapolation of 3D wake from model to full scale, but most of the people in possess of model and full scale wake refuse submitting them to us, they pretend not to understand is that nobody is interested in the wake, but in its scaling, and the we do not need to know the details of the vessels.

I completely agree on the sheer folly of setting contractual obligations for conditions that will not be tested at full scale, thereby leaving a lot of room to manipulate the results to one's advantage.

Kind regards,
Giulio Gennaro.