From METEOR 1988 to ANONYMA 2013
and further!

Celebrating my quasi-steady METEOR trials
in the Greenland Sea, November 1988,
and pioneering the rational theories
of propulsion 1980 and traditional trials 1998

Michael Schmiechen

Future Ship Powering Trials and Monitoring
Now!

Volume 1
Published on occasion
of the 108th Annual Meeting of STG,
the Schiffbautechnische Gesellschaft,
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Volume 2
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in memoriam
Versuchsanstalt für Wasserbau und Schiffbau, Berlin

THE COMMANDMENTS OF RATIONALITY, OF OBJECTIVITY AND, LAST BUT NOT LEAST, OF EFFICIENCY

"Thou shalt not talk in terms of incoherent models and of incoherently interpreted concepts."

"Thou shalt not introduce more parameters in vain than you can identify reliably without any prior data."

"Thou shalt not adhere to traditional trials, quasi-steady trials being necessary and possible for performance monitoring in service anyhow."

2 Moses 20, 1 – 17. Paraphrases: MS.

Contents of this leaflet

Executive summary published on my website and distributed at the 27th ITTC, Copenhagen, August 31 to September 5, 2014, **with an Addendum of November 17, 2014.**

Executive abstract of the Festschrift celebrating the quasi-steady trials with METOR etc

PROBLEM

The evaluation of ship powering trials is still treated as hydro-mechanical problem, although it is basically of 'conventional' nature – *not* to be mistaken for 'traditional' –, part of a whole range of intricately intertwined contractual and legal conventions.

'Theoreticians' at universities and model basins have 'simply' left the very difficult problems of trials and monitoring of the powering performance to 'practicians' at ship yards and model basins. And, hard to believe, ship owners still accept, that the same 'people' providing the predictions are carrying out and analysing the trials 'as well'.

And having ignored the state of research for decades naval architects are suddenly facing the problem to set up the standards to be met and to be made legally compulsory!

The structure, the implications and the relations of the conventions involved are usually *not* stated explicitly and are thus only vaguely known. In particular, the underlying 'instinctive' beliefs and convictions are *not* generally shared, although the same 'principles', as they are fashionably called, – 'principles' being another name for 'prejudices' as Mark Twain aptly noted –, are essential pre-requisites of conventions.

Conventions are agreements, are languages and their implications (to be) agreed upon. While traditional conventions are usually *not* explicit, incoherent languages, rational conventions are explicit *formal languages constructed ad hoc for the purposes at hand*. In terms of logics these are axiomatic systems, a frightening name for extremely useful tools, their construction not to be left to naval architects.

STRUCTURE

Evidently there are three or rather *four systems of conventions* concerning the following 'operations' clearly and cleanly to be distinguished.

Firstly, *conduct of trials and acquisition of data*. Concerning this matter all existing conventions, differing only very little, may easily be harmonised. But as many trials are performed at ballast conditions the related conventions have to be augmented as the ANONYMA trials have drastically shown!

Secondly, *objective, observer independent evaluation at the trials condition and reduction to nominal conditions of no wind and no waves* without reference to any prior data, as it must be. This is the crucial problem, concerning which all 'traditional conventions' in use and/or proposed are unacceptable. They all rely on inadequate, to say it politely, prior data selected 'as required' for the purposes at hand! This is the problem I have been concerned with.

Thirdly, *'extrapolation' (!) of powering to contract conditions* differing from the trials conditions. If this is requested, prior data 'have to be' used, if variations of trials conditions do not permit reliably to identify the relevant parameters. Concerning this point the 'competing' conventions may also be harmonised as well, − if one does not prefer to follow my proposal and rely on objective monitoring under service conditions shortly after the 'acceptance' trials.

Fourthly, *monitoring of powering at service conditions*. Any standard not taking care of this fundamental task is incomplete! I have already published a preliminary exercise, demonstrating the problems encountered and the second volume contains all details of a quasi-steady 'model' trial.

SCOPE

Volume 1 starts with a comprehensive, systematic outline of the various problems faced and their solutions developed so far. After the discussion of 'Conventional approaches', − not to be confused with 'traditional' −, the 'Balance of forces [is] rationalised' and the 'Balance of powers [is] promoted'.

The second essential part of the volume deals with the detailed analysis of the ANONYMA trials off the Coast of Morocco at two different trim settings, and thus two different nominal propeller submergences, leading in one case to propeller ventilation, together with related discussions.

Further chapters deal with quasi-steady trials and monitoring and finally with the pending revision of the standard ISO 15016: 2002-06, explicitly demonstrated to be inherently error prone already in 1998.

Volume 2 contains the first Post ANONYMA Trial Evaluations (PATEs) of two sister ships in the East China Sea, once again demonstrating the extreme transparency and providing sound confirmation of the objectivity of the rational method promoted for the evaluation of traditional trials, together with a related explanations and discussions.

An earlier complete analysis of the propulsive performance of a model based on the quasi-steady test of only two minutes duration and comparison with traditional results has demonstrated the extreme efficiency and reliability, respectively, of the quasi-steady approach proposed, getting along without traditional hull towing and propeller open water tests at flow conditions 'far away' from those in the behind condition.

Work still in progress has recently demonstrated, that even if the model thrust data are ignored current, propeller powering characteristic, resistance and propulsive efficiency can be identified reliably, thus indicating the course to be held in developing the standard ISO 19030 aiming at efficient, reliable trials and monitoring of the powering performance full scale under service conditions.

MS 2014-028-28 / 2014-09-09 / 2014-11-17

Contents of Volume 1

Contents of Volume 2

Links to the pdf-version of this volume as well as to all the material in this volume are to be found under 'From METEOR 1988 to ANONYMA 2013 and further' in the Section 'News on ship powering trials' on my website www.m-schmiechen.de.

'Disclaimer'

Despite utmost care my very complex, intricate texts and programmes may still contain mistakes and obscurities. If brought to my attention I shall 'repair' them and gratefully acknowledge any assistance serving correction and clarification, respectively.

An explanatory mail to Dr.-Ing. U. Hollenbach at HSVA concerning the first Post ANONYMA Trial Evaluations PATE_01.1 to .3 and PATE_02.1 to .2 with PATE_00.2

The following e-mail is the translation of an extended explanation of my independent evaluations of traditional powering trials with two sister-ships in the East China Sea. The provision of the basic mean values, being objects of a joint HSVA / SSPA project, and the permission to publish the results granted by Dr. Hollenbach at HSVA are gratefully acknowledged.

As usual a translation is instrumental in clarifying arguments, though in this case only marginal changes and few additions have been necessary. The 'final' versions of the PATEs under discussion together with my complete related correspondence with Dr. Hollenbach, of 'cause' in German, are to be found on my website www.m-schmiechen.de under 'News on ship powering trials'.

From: Michael Schmiechen
Sent: Wednesday, June 4, 2014 3:12 PM
To: Uwe Hollenbach
Cc: Klaus Wagner ; Friedrich Mewis ; Stefan Krüger ;
Bettar Moctar ; Som D. Sharma

Subject: Our correspondence on PATE_01 and _02 cont'd

Dear Dr. Hollenbach,

during further, more 'physical' home work I had plenty of time to ponder the comparisons of our evaluations of the powering trials with two sister ships in the East China Sea.

In advance!

My correspondence with Dr. Klaus Wagner at Rostock is much more extended and detailed than ours. It is as intense as my style of working, at least so far. Between my drafts and results and his responses delays of two months never occur!

our first meeting on occasion of my 2nd INTERACTION Berlin '91 he is not only one of the few colleagues always interested in the development of my ideas, but he has often taken active part in that development.

And since my retirement from VWS, the Berlin Model Basin, Dr. Wagner has played the role of my lector, always creative and prompt. And for this service I am most thankful. During all my professional life I have always had my drafts scrutinised by lectors before 'delivery', so this mail.

Statistics over all double runs

But now to the subject itself. Two worlds can in fact not differ more than ours! Without referring to details I noticed in your remarks, that you always consider individual double runs. But I will not, I cannot follow you onto this ‘level’. According to my long, pertinent, painful experience the analysis of single runs is not meaningful due to the omnipresent random disturbances due to causes of ‘any’ type.

Therefore I always jointly consider all double runs available, or selected for ‘good’, qualified reasons. And I analyse the residua with utmost care concerning deviations from normal distributions. This way I check the adequacy of my conventions adopted and at the same time the applicability of the elementary theory of samples.

Friedrich Mewis occasionally mentioned that I am evaluating trials like a physicist. And of course he was right! I am in fact doing it as a ‘mechanist’ according to the current state of the art and not according to the traditional practice of naval architects. I have repeatedly stated that there are too many naval architects in ship model basins.

They ‘believe’ to know, what the output ‘should’ be, and there are too few theoreticians, who ‘know’ how to ‘arrive’ professionally at the output. The ritual repetition of the misunderstood rules of the elementary theory of samples is not sufficient for the difficult problems at hand.

Analysis of ‘raw’ data

My procedure is already necessary in view of the fact, that I myself could not scrutinise and analyse the basic data, as has been possible in case of the ANONYMA trials. ‘Mean’ values of unknown origin I am always using only with extreme care.

As I have experienced during the evaluation of the METEOR model test results, and just now during the continued analysis of my quasi-steady ‘model’ test of 1986, in cases of doubt not more or less obscure mean values are relevant, but stationary values, extrema! Even at ballast conditions the smallest accelerations upset the energy, alias power balances.

Balances of partial energies

Here comes the repetition of another fundamental statement: I am not considering momentum, alias ‘force’ balances, but following Lagrange I consider balances of partial energies, alias power balances. As a consequence a number of problems encountered in the traditional approach do ‘principally’ not exist in this approach! In particular the propulsive efficiency is not at all necessary for the analysis of traditional trials data.

This is in contrast to the ‘ITTC 2012 Guideline’, not yet approved by the Full Conference, but already ‘universally’ accepted. In this Guideline the propulsive efficiency ‘figures’ as a fundamental ‘input’, surprisingly not even occurring in the list of symbols and ‘forgetting’ about its ‘origin’, evidently playing the role of a joker pulled out of the sleeve. As I have explained earlier in my view the name ‘direct power method’ for this procedure is the most blatant des-information possible.

Supplied power first

Due to the usually relatively small variation of the propeller loading during trials the analysis of the data can be separated into two partial problems. The stable solution of each of them is simply obtained as solution of a system of linear equations, provided one uses numerical methods adequate for solving more or less ill-conditioned systems of equations.

As appropriate I have first analysed for the power supplied and thus jointly identified the current and ‘calibrated’ the propeller, full scale (!) under trials conditions (!), i. e. at the extremely small nominal submergence at the ballast condition and in the prevailing sea state.

Checking my results PATE_01_1 to _3, based on three different sub-jsets of double runs, I notice, that the propeller power characteristics and currents I have identified are ‘practically’ independent of the number of double runs accounted for. Using a traditional method, known to be error prone, you have identified considerably different values of the current, and thus the propeller characteristic you identified differs also considerably from mine.

In case of PATE_02 at more favourable environmental conditions the current values we have identified are nearly identical and thus the propeller characteristics. And the latter are in very close agreement with the characteristic I have identified before for the sister ship (PATEs_01).

Current: ’fundamental’ solution

Your remark that my method to identify the current is more elegant than that of Peter Schenzle, HSVA is still using, is a typical ’understatement’ of naval architects, who do not ‘want’ to understand the problem and its solution. You may want it or not, my axiomatic interpretation of the concept is in fact the only meaningful. It ‘works’ without any expensive and delicate devices and without any extra calibration at any wind and waves condition.

Even Dr. Klaus Wagner and Dr. Giulio Gennaro at Genova in the depths of their hearts felt that my solution was provisional, some day to be replaced by logs to be developed using ‘advanced’ techniques available. But any these of logs suffers from the same fundamental deficiency as any of the ‘simple’ thrust meters invented by dilettantes and developed in wasteful ‘research’ projects. Even if they would ‘function’ some day, neither the thrust meters nor

the logs could be calibrated! But what sort of ‘measuring’ systems are they, if they cannot be calibrated? Would you consider buying any of them?

Power required

After having jointly identified the current and the propeller power characteristic in behind condition I have analysed the power required, in order to reduce the data to the nominal (!) no wind and no wave condition defined.

That my very crude model of the power required used in the case under consideration and others has repeatedly been felt inadequate by Dr. Wagner and Dr. Gennaro. But both admitted that the [only crudely ‘estimated’] few data often available do not permit more than ‘to nail the egg onto the rail’, as Columbus did before.

Further detailed comparison of the data acquired during the trials with the two two sister ships may provide deeper insights and further ‘results’. Thus in case of PATE_02 I have used a parameter of the required power identified before in PATE_01; see below.

Analyses of significance

To answer your detailed questions I will have to study the confidence ranges, which I have always determined and reported. I admit that my loose, qualitative, marine engineers remarks concerning the quality of results and their agreement based on those ranges are certainly too vague to meet the ‘standards’ and claims of naval architects.

In case of the ANONYMA trials I had the confidence ranges of the average values available, based on the raw data scrutinised before. I am looking forward to your analyses, that must be basic constituents of your joint research project with SSPA.

With my thanks for the permit to publish my analyses and their results I ask you, kindly to excuse this repeated attempt to explain aspects I consider essential and, at the same time, that you also publish all details of your evaluations. Only this will permit all interested colleagues, among them Stefan Krüger and Bettar el Moctat, to arrive at their own judgement.

Surprising coincidence

Again and again I have explicitly stated, that the values of the concepts constituted and interpreted by my conventions need in principle not to coincide with the values of the corresponding traditionally interpreted concepts. For linking up with prior experience the coincidence is of course ‘useful’, but maybe misleading.

The surprising, nearly perfect coincidence of our final results, despite my restraint on the essentials, avoiding naval architectural folklore and ‘thousands’

of little corrections, will cause and require even hard-boiled naval architects to think twice.

How you arrived from your defective intermediate values [in case of PATE_01] at you final results and came up with the idea that I have tuned my results with your results, you will certainly explain to me and our colleagues occasionally.

Who is afraid of the wicked guy?

Your opinion expressed earlier, that clients of HSVA may be shied away by mentioning my name, frightened by my naked pragmatism, is hard to believe, maybe even for yourself. Frightened for well understood reasons are my colleagues at some model basins.

For clients everything is ‘the same’. As long as they accept the same ‘people’ to provide the predictions and their confirmations ‘as well’, they want to be cheated or want to cheat IMO in proving to conform to the required EEDI.

Acceptable standards

Since my Schiffstechnik and STG papers of 1980 it is known that acceptable and lasting conventions are nothing else but axiomatic systems. And that their construction should not be left to naval architects, but experts in formal languages.

Consequently I have asked such experts [also in connection with other, fundamental standards], but so far without success. Because: ‘Everybody is concerned with himself and his own problems, only I am concerned with myself and my own problems.’

But everybody interested will admit, that my procedure is very transparent and, as the examples show, is objective, i. e. independent of the ‘observer’, of the person in charge of the evaluation. It depends on very few, ‘self’-evident conventions, and, as it must (!) be, does not depend on any further prior knowledge, any prior data selected *ad hoc* (!) and data derived from model tests suffering from the lack of similarity of flow conditions, in particular without values of the propulsive efficiency.

My procedure, as far as I have developed it so far, thus meets the prerequisites and requirements of a reasonable, acceptable standard, as I last noted in my HANSA paper of 2013. And for that reason I repeat my publicly stated and now even more solidly founded conviction, that ITTC, ISO and IMO in the ‘wake‘ of MARIN, the emperor in his new clothes, the ‘unbelievable’ STAimo method, obstruct the urgently necessary rationalisation for at least the next decade.

Further developments

Personally I shall most likely not witness the end of this obstruction. But I am confident that young colleagues will pick up my efficient rational xxx and develop them further. Michiel Verhulst and Patrick Hooijmans at Wageningen (!) are doing that already for a long time, with explicit acknowledgement of my pioneering work.

They do that in view of extremely efficient trials and monitoring requiring no thrust measurements, that is much simpler than my very ambitious METEOR project in 1988. "But [as] Jesus said unto them: A prophet is not without honour save in his own country, and in his own house" (Matthew 13, 57), 'of course' no such research and development efforts take place in Germany [except for my own, results to be presented at the forthcoming 27th ITTC at Copenhagen].

Quasi-steady trials and monitoring

How the propulsive efficiency can be reliably identified based on quasi-steady trials without thrust measurements (!) I have just demonstrated using the data of my 'model' test of 1986. So there is no need to pull the joker out of the sleeve.

The problem in this case is the reliable identification of the current. The solution is possible as before, if only the steady states during the quasi-steady test are determined and analysed.

Critical discussion

I did not lecture over forty years professional problem solving in 'treating' hydro-mechanical systems to let the dilettante ITTC 2012 Guideline 'pass' without comment.

Under Hermann Lerbs, Otto Grim, Odo Krappinger, as well as Fritz Horn, Hans Amtsberg and Siegfried Schuster such a sloppy report would never have left a model basin.

And Hans Edstrand, former director of SSPA, would have fired each of the members of the ITTC Specialists Committee on Powering of Ships in Service (SC PSS) individually. His credo was that Specialists had nothing to do at the Conference of Tank Superintendents (!), who still knew the problems under discussion and to be solved by themselves.

I have proposed the same 'procedure' to the Chairman of the Executive Committee after the members of the PSS Specialists Committee on occasion of one of their expensive meetings came up with the finding for him (!), that my procedure for the evaluation of traditional trials requires thrust measurements.

Despite the detailed documentation of the exact opposite, repeated since 1998 to meet any taste, non of the members, including yourself, prevented the blatant des-information of the Chairman.

Credibility ahoy!

Subsequently I have observed with interest, that the untenable ITTC 2012 Guideline, prematurely forwarded to IMO contrary to the Rules of ITTC, for a while vanished from the website of ITTC, to reappear only shortly later, and that in the meantime ITTC suddenly has a new Chairman! I wonder how he will sort out the complete mess into which the SC PSS and his predecessor have produced.

That the MARIN inspired ITTC 2012 Guideline will not only be adopted by IMO, but part of the revised standard ISO 15016 will in the meantime have been approved by all national groups, including the German consisting of you alone (?). My request to provide the example included in the standard for independent scrutiny as in 1998, could not been granted due to the alleged lack of such an example.

Rules of the game

Subsequent to my detailed draft of a new edition of the fundamental standard DIN 1313 'Grössen' ('Magnitudes', alias 'Quantities') and its emotional, unqualified xxx by the authors of its current version, some of them logicians at my age, I now not only understand, how standards are 'made', but why it is done that way.

The rules of DIN and of ISO, to establish a consensus of interested groups, tend to perpetuate the current state of practice and thus to delay or even to inhibit progress. Individual experts are explicitly excluded and my correspondence with DIN is strictly confidential!

'Accordingly' my website has been regularly checked for 'illegal' publications. I even had to delete not only links, but the corresponding files from my website. But my draft a well as related discussions of the interesting, fundamental project and the documentation of the whole 'history', whatever DIN could not 'prohibit', is to be found on my website.

With my best wishes for Pentecost, 'Pfingsten, das liebliche Fest', as Goethe started his 'pretty' obscene 'Reinicke Fuchs',
yours, Michael Schmiechen.

Written Discussion of the Report and Recommendations of the Specialists Committee on the Performance of Ships in Service (SC PSS)

In view of my extended correspondence with the SC I am amazed at the *Report and Recommendations*. The Report and the References attached deal to a large extent with subjects to be treated by the Propulsion Committee proper, while the SC has decided not to consider, not even to mention my pertinent critical remarks and published results. After all, I had expected a convincing argument for *not* adopting at least the mature routines of the rational procedures I am promoting in the interest and for the benefit of our clients.

The *Terms of Reference* are extremely vague, lacking a clear-cut structure, though (maybe?) not the fault of the SC. But 'consequently' the Report suffers from the same deficiencies. The Terms start with the misleading statement: "The purpose of the Committee is to improve the performance predictions …". But the purpose of the Specialists Committee and of the Procedure 7.5-04-01-01-2, Rev. 1, proposed for adoption by ITTC and subsequently by ISO and IMO is to provide generally acceptable standards for trials and monitoring, permitting to prove that the performance under service conditions meets the predicted and/or contracted values.

The basic *rules of fair-play* require that the same 'people', who have produced the prediction, should not produce the proof 'as well'. I have always been wondering how long ship owners will accept this practice and I claim, that ITTC can only save its credibility, abandoning this practice as soon as possible, resorting to truly transparent, objective procedures. And according to my experience this can be achieved by clearly distinguishing between the analysis of the performance at the trials condition and 'reduction' to the nominal no wind and waves condition, without reference to any prior data as it must be, and the 'extrapolation' (!) to the performance at the contracted condition, if different from the trials condition, avoiding reference to prior data wherever possible. Both problems are not problems of hydro-mechanics, but of simple, generally intelligible and thus acceptable conventions.

The *Terms of Reference proposed* for the next SC, if any, tend to perpetuate this state of affairs, unless the Advisory Council successfully enforces the goals it has set forth in the 'ittc news' no. 64. These goals have evidently been conceived in view of the failure of the SC and the deplorable consequences, I have pinpointed repeatedly. Among the randomly listed 'aspects' to be investigated I am missing among other important items the influence of the propeller submergence at trials in ballast, the most common condition. As my evaluation of the ANONYMA trials has shown reference to the performance of deeply submerged model propellers in open water is evidently nonsensical.

MS 2014-028-28 / 2014-09-09 / 2014-11-17

The 'Direct Power Method', a blatant misnomer, is still kept alive by many prior data to be sucked from thumbs, and the propulsive efficiency in particular, the joker to be drawn out of the sleeve. I have not found, wherefrom else it comes! According to the 'commandment of objectivity' the goal must be to introduce highly aggregate models, the few parameters of which can be identified from the few data usually acquired. For an independent check I am still trying to obtain the data of the example claimed to be included. As the members of the SC know, I have published such studies in every detail in case of the standard ISO 15016: 2002-06 and, more recently, in case of the ANONYMA trials for Dr. Hochkirch of DNV-GL and in case of my PATEs for Dr. Hollenbach of HSVA.

Most 'surprising' in the *Report and the Procedure* is the naive identification of the current prevailing at the trials. In view of the omnipresent random disturbances the analysis of individual double runs is not acceptable, as I have explained to Dr. Hollenbach in detail. Already in 1998 I have demonstrated how the current can be identified objectively and reliably, including all double runs and without reference to any prior data. (Filed by JISC/JMSA as 'Prof. Schmiechen's comments to ISO/TC8/SC9/WG2 /N20, Informative' under ISO/TC8/SC9 /WG2/N28, dated 1998-06-23).

And what is a 'verifier' supposed to do, that has no experience (page12)? If his sole purpose is to check (✓) formal compliance with more or less obscure 'regulations', the SC should have rejected his 'institution'! How long are we going to afford this and other incredibly inefficient 'bureaucratic' procedures, instead of caring for the essentials and forgetting about the doctrine 'not invented here'? The first of the chapters of the report are full of such 'procedures'!

Surprisingly, or rather not (!), I noticed that, different from the established practice followed by all other Committees, the SC PSS does not cover all pertinent publications, at least over the past conference period. 'Instead' I find, after all our correspondence, the ritual repetition of the incorrect (!) statement: "With the acceptance of these new procedures, the ITTC and IMO have established a transparent, straightforward best practice and a level playing field for the delivery of new ships for all stakeholders."

Most amusing and revealing 'best practice' and 'level playing field' are in bold print! As the Report shows, the procedure is neither straightforward nor transparent and, most important, the ITTC has not yet accepted this procedure! And according to the 'News from the Advisory Council', ITTC is not a playground!

The term Recommendations occurs in the Heading and further only twice in the Report, a concise list is missing. If the Procedure 7.5-04-01-01-2, Rev. 1 proposed for the evaluation of traditional trials will be approved by the Full Conference, not only progress will be prevented for decades, but ITTC will

have lost its reputation based on serving clients at the forefront of research. The EC needs Experts understanding the nature of the difficult problems to be solved and being familiar with the advanced conceptual, statistical and numerical methods necessary for their professional solution, being 'naturally' standard' in other fields of science and technology, and, last but not least, responsible Experts producing reliable Reports and Procedures meeting explicitly stated and clearly understood goals and resulting requirements.

Plot of Hans Christian Andersen's Tale of 'The Emperor's New Clothes', Copenhagen 1837, 2012, and 2014 (!).

A detailed discussion of the 'ITTC 2012 Guideline', prematurely contra legem forwarded to the MEPC of IMO, has been published in Volume 1 of this 'Festschrift' under the unmistakeable title 'The Emperor's New Clothes' in subsection 4.3.4, pages 34 thru 37. For ready reference only the plot of the tale is quoted here from the Wikipedia:

> "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 pretense 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 pretense, 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.*

Analogies of the various aspects addressed are self-evident, and thus need no explicit explanation. Evidently, to continue the procession is not a viable choice as it will further prevent progress for decades as did ISO 15016: 2002-06. Evidently the Advisory Council is aware of this fact as the following News explicitly states.

[Good] News from the Advisory Council

ittc-news (March 2014) no.62, page 2

Since the last ITTC Newsletter the Advisory Council has considered some issues regarding the future of ITTC. A master plan shall be developed by a special group or committee to be established in the 28th ITTC. The main aim of this master plan is to achieve that ITTC is more proactive. All ITTC member organisations are invited to make suggestions for long term issues of ITTC and send them to the AC Secretary Aage Damsgaard.

After it has been possible to achieve at IMO to get the ITTC Recommended Procedures for Model Manufacture, Resistance, Propulsion, Open Water Test and ITTC Standard Prediction adopted as standard for the prediction of the EEDI (Energy Efficiency Design Index), the legal position of ITTC has changed. The consequence will be that the ITTC procedures (at least the ones which are concerned) in future will have to be even more unambiguous, precise, and offer less choices.

With regard to the EEDI a specialist committee on 'Ships in Service' has been established which was mainly to deal with the conduct and evaluation of ship power/ speed sea trial. As it was not possible in the committee under the time pressure to come to a common solution, the chairman of AC who has been delegated by the AC to represent ITTC in the IMO, in agreement with the AC and the committee's chairman interfered and presented a procedure for the evaluation of the speed sea trial which is based on the use of etad and load variation tests.

ISO, after a voting, could not maintain their standard 15016 and has asked ITTC to co-operate in order to come to a common procedure.

"In the ISO WG, the group agreed that revised ISO15016 should be reliable, simple, user-friendly, consistent and less ambiguous. In this regard, the group agreed to use the 2012 ITTC Guidelines for speed power trials as a starting point. ITTC has been willing to contribute to the revision work of ISO15016, and the ISO revision process was focused on improving relevant elements of the 2012 ITTC Guidelines for speed power trials.

In this way, based on the 2012 ITTC Guidelines, the harmonized ISO15016 draft has been developed owing to the collaborative efforts between ISO and ITTC."

The ISO standard is now subject to a voting again.

After the common informative submission of the ISO 15016 to IMO discussions started again, with contributions of several stake-holders who want to lobby their particular interest in ITTC as well as in ISO. ITTC is only open for clear physical explanations and improvements, which need to be validated without any doubt. It is clear to ISO as well as to ITTC that further improvements of their 'sea trial procedures' are possible and necessary within the next three years.

The experience with IMO and ISO showed that the organisation of the ITTC is not suitable for dealing with issues under time pressure. The AC has taken notice of that and will suggest a way out of this situation.

On quasi-steady trials model and full scale

The problem is, that traditional trials, still 'standardly' performed and evaluated according to various traditional 'Codes' although very inefficient, expensive and unsatisfactory, are hopelessly inadequate for monitoring of the powering performance of ship in service.

The theoretical solution to overcome the deficiencies has been proposed in 1980 and the quasi-steady trials with METEOR in 1988 have demonstrated that, based on reliable measurements of thrust and torque with a calibrated shaft, the powering performance can be analysed in every detail.

Although reliable measurements of thrust are not prohibitively expensive, evidently nobody is 'interested' to perform them. The 'simple' reason is that traditional evaluations would require hull towing and propeller open water tests, definitely not possible at service conditions.

And the rational approach, being 'not invented here', is still 'ignored', even on model scale, although the model technique has been developed to maturity using the data of a quasi-steady 'model' test, performed before the METEOR test in 1986.

In view of the fact, that measurements of thrust are 'never' performed, I have analysed the 'model' data, ignoring the thrust data. And I have identified the total resistance and the propulsive efficiency in excellent agreement with the results of 'complete' rational and traditional evaluations. 'Streamlining' all programs for routine applications remains an ongoing task.

And finally I have identified the current in the model basin and the propeller powering characteristic in the behind condition, based on the quasi-*stationary* conditions passed during the quasi-*steady* trial, a method already applied in 1989 and mentioned in the Proceedings of my 2nd INTERACTION Berlin '91, thus paving the road for full scale applications and the (hopefully rational) standard ISO 19030 under development.

If applied on full scale the powers required due to the motion through the water and due to wind and waves can also be identified and thus, with the propulsive efficiency identified before, even the hull resistance and the wind and wave resistance! *Nota bene*: No thrust measurements being required!

Acknowledgement

Altogether my most recent results complete the triumph of Fritz Horn’s (1880-1972) vision and proposals already tested before and discussed during the 4th ITTC at VWS in Berlin 1937. At that time they 'only' suffered from inadequate conceptual, experimental and computational tools, further developments being disrupted by the second world war.

But all these limitations no longer exist!

MS 2014-028-28 / 2014-09-09 / 2014-11-17

Addendum published on the occasion
of the 109th Annual Meeting of STG,
Hamburg, November 19 to 21, 2014.

Concerning various discussions in the 'News flash' on my website and on continuing work concerning quasi-steady trials and monitoring since the ITTC at Copenhagen.

Contents of the 'News flash' on my website
Last updates and additions 2014-11-10

As usual all documents are easily accessible or ready reference by the links on my website. Printed volumes of the Festschrift are still available on request.

"Further, the following related
Oral Discussions
have been contributed at the Sessions on Propulsion and on Performance of Ships in Service.

Triggered by various discussions
An explanatory letter
'On ship theory and paradigms' has been written and published here, inviting further discussions.

The latter resulted in
Further explanatory remarks
(see page 22) and the following addendum
On 'true' models
by Dott.Giulio Gennaro of Genova.

Following the invitation to contribute to the discussion on the Future of ITTC I have drafted the following
Pertinent proposals.

In the meantime the re-evaluation of the quasi-steady 'model' propulsion test of 1986 is being finalised."

Future Ship Powering Trials and Monitoring [*not yet*] Now!
A note on evaluating traditional trials
Originally drafted for publication in HANSA in its STG-Edition

At the recent 27th International Towing Tank Conference, held at Copenhagen from August 31 to September 05, 2014, the Full Conference has approved all Recommendations with 100 % assent (!), among them the ITTC Procedure 7.5-04-01-01-2, Rev. 1, for the evaluation of traditional steady trials, proposed by the Specialists Committee on the Performance of Ships in Service. In its essential parts of that procedure had contra legem already prematurely been forwarded to the Working Group on the revision of the standard ISO 15016 and to the Marine Environment Protection Committee (MEPC) of IMO.

As it 'happens' and has repeatedly been explained in detail by the present author the strictly traditional procedure, misleadingly called 'direct power method', does not meet acceptable theoretical standards and the requirements of transparency and objectivity. But despite its deficiencies it will not only be standardised by ISO, but will become legally compulsory adopted by IMO, and will thus impede progress in the interest of towing tanks and their clients for decades. Its fundamental defect is that it depends on a large number of prior data, to be selected 'as required', among them, as joker to be pulled out of the sleeve, the propulsive efficiency derived from model tests.

For reasons undisclosed the Specialist Committee and the Executive Committee of ITTC have adopted the strategy of ostriches: They did not even mention my alternative, extremely transparent method, repeatedly, successfully demonstrated to get along without any prior data and to produce objective, 'observer' independent results, as it must be. Among other pertinent material examples of evaluations of very delicate cases have been published in the two volumes of my 'Festschrift' celebrating the pioneering quasi-steady propulsion tests with the research vessel METEOR in the Greenland Sea 1988, the most prominent application of the rational theory of propulsion promoted since 1880.

Explanatory letter cont'd

Sent: Saturday, November 8, 2014 11:01 AM

Subject: Explanatory letter cont'd

Dear Giulio Gennaro,

the following addendum to my explanatory letter has been triggerd by objections concerning my usage of the term 'holistic' for describing my approach and concerning my way of talking about 'Copernican turns'.

As I have stated over and over again, I belief in naked pragmatism, as Osiander did in his introduction 'Ad lectorem' to the first edition of 'De revolutionibus ...' by Nicolaus Copernicus. And of course Humpty Dumpty is 'right' in stating: "When I use a word, it means exactly what I want it to mean".

'Even' logicians know that; Lewis Carroll was one of them! 'Consequently' I am usually explicitly (!) referring to my subjects as 'micro-universes of discourse'. This may sound arrogant, as I have mentioned myself, but it is the state of the art 'outside' the micro-universe of current ship theory.

The term 'holistic' remains 'in fact' an empty shell, a decorative byword, as long as I do not introduce a coherent set of conventions, i. e. axioms, sufficient for the purpose a hand. Talking without specification about the 'Whole' is as devoid of meaning as is talking about 'God' without specification of His

'aspect' under discussion, e. g. the God of Worshipers, the God of Philosophers or the God of Astro-Physicists.

Thus I am not talking about 'undefined subsets of the universe', but modestly consider well-defined 'micro-universes', e. g. ship hulls and propellers 'jointly', forgetting about Froude's incoherent interpretations of fundamental concepts. And I have demonstrated that among others only (!) this approach permits, in an intellectually satisfactory fashion according to current (!) standards, to evaluate the performance of ships in service and to design energy wake adapted propulsors as pumps, implicitly treating all interactions!

While at the METEOR tests I have performed reliable thrust measurements with a calibrated (!) shaft, this is not (yet?) possible routinely, not even for the torque! 'Consequently' I have successfully developed the evaluation of quasi-steady tests, requiring no thrust-data! After finishing this letter I shall finish the re-evaluation of my quasi-steady 'model'-test of 1986, avoiding earlier small and large (!) mistakes, often too rash jumps to conclusions.

Concerning the term 'Copernican turn' the same remarks hold. There is no doubt, 'how I use the term'. Only recently I have read about the history of this term, but that is another 'story', which I am not concerned with. Again, this is not arrogant, but naked pragmatism: I just want to indicate, what has 'happened'. And to understand, why (!) for decades my colleagues 'could not' acknowledge, what has happened.

Concerning 'true' models I have understood, that there are none, but only (particularly) useful models, and that 'objectivity' can never be more than 'inter-subjectivity', based on shared conventions, in the near future hopefully coherent (!) languages.

And to repeat: Words outside coherent languages are meaningless. Thus the 'same' words in different coherent languages have different meanings per definitionem. Talking in terms of incoherent languages comes next to nonsense, as is confusing languages: the famous 'double speak' used to confuse and deceive people. I have just re-read 'Nineteen Eighty-Four!

Before ending this complement to my explanatory letter I add one last remark. Not only Members of the ITTC Specialists Committee on the Performance of Ships in Service, ignorant of what I have achieved, feel free to judge my work. I am sorry to say, that I am no longer willing to accept this 'practice', but I shall make it public in any particular case.

With kind regards yours,
Michael Schmiechen.

On the final evaluation of my quasi-steady propulsion 'model' test of 1986

Since my last note concerning the project of quasi-steady testing and monitoring and its status on occasion of the ITTC (see page 20) I have intensely continued work on the evaluation of my 'model' test, the complete documentation under preparation to be published soon.

As has been mentioned, with the power required and the propulsive efficiency identified ***the resistance*** of the model with the propeller operating (!) can be derived and compared with the towing resistance of the bare model hull. The values of these two conceptually and physically 'slightly' different magnitudes, alias 'quantities', differ in fact only slightly in the small range of speed variations.

Much more interesting is the fact that the propulsive efficiency identified together with the extremely simple wake and thrust conventions, introduced and 'proven' earlier to replace hull towing and propeller open water tests, permit to derive, as solution of a non-linear equation, among all details of the powering performance even ***the thrust***. The values of the thrust obtained accordingly coincide perfectly with those measured and ignored in the evaluation. Robustness of the procedure is subject of ongoing scrutiny.

Thus my quasi-steady 'model' propulsion test of two minutes duration, getting along without hull towing and propeller open water tests, demonstrates that quasi-steady trials full scale, lasting about half an hour, requiring no thrust measurements (!) and, to repeat, without anybody even noticing that such tests are being performed, are sufficient to monitor the powering performance of ships in every detail under any service conditions.

The present exercise brings to its happy end the work started in 1980 with my first exposition of 'an axiomatic theory of ship hull-propeller interaction' and resulting in the METEOR test of 1988. Accordingly ***in hindsight*** (!) the singular (!) METEOR tests could have been carried out very much simpler and cheaper. Much more dramatic is ***the foresight***, that all routine powering trials and monitoring can and will in future be performed very much simpler, cheaper and more reliable and trustworthy than following the 'incredible' procedure adopted by the 27th ITTC 2014, by ISO and IMO.

In view of the advantages of the very transparent procedure developed I am looking forward to its first applications model and full scale.

Last update 2014-11-17

References

'**Festschrift**'

The following two volumes on the rational theory of ship propulsion and its application to trials and monitoring are basically 'letters' addressed to my students and colleagues, as well as to whom it may or rather must concern, governing bodies and pertinent committees of the ITTC, ISO and IMO in particular.

Schmiechen, M. From METEOR 1988 to ANONYMA 2013. Future Ship Powering Trials and Monitoring Now! *Volume 1*: Principles of rational conventions further clarified, consistently applied in a particularly delicate case and lessons (to be) learned, various subsequent presentations and written discussions added. Published on occasion of the 108th Annual Meeting of STG, the Schiffbautechnische Gesellschaft, Berlin, November 20 to 22, 2013. VWS Mitteilungen Heft 62, post mortem, Berlin 2013. In memoriam Versuchsanstalt für Wasserbau und Schiffbau, Berlin.

Schmiechen, M. From METEOR 1988 to ANONYMA 2013. Future Ship Powering Trials and Monitoring Now! *Volume 2*: The first PATEs: Post ANONYMA Trial Evaluations, the continued evaluations of a quasi-steady ‘model’ propulsion test of 1986, demonstrating the feasibility and ‘efficiency’ of quasi-steady trials, pertinent documents and discussions added. Published on occasion of the 27th International Towing Tank Conference, Copenhagen, August 31 to September 05, 2014. VWS Mitteilungen Heft 63, post mortem, Berlin 2014. In memoriam Versuchsanstalt für Wasserbau und Schiffbau, Berlin.

Both volumes have been published among all the related material on my website in the Section 'News on ship powering trials' and may also be directly accessed via the links

http://www.m-schmiechen.homepage.t-online.de /HomepageClassic01 /Festschrift_1.pdf or /Festschrift_2.pdf, respectively.

For ready reading and reference the pdf-files of the two volumes, as the pdf file of this leaflet (/FS_Leaflet_1_2.pdf), may be printed as DIN A5 brochures, in view of the 'volumes' conveniently at a copy shop, and in view of the costs in black and white as the first volume distributed at the Annual Meeting of STG. Evident mistakes in the layout of the latter have since been 'repaired' and some remarks concerning related work on monitoring have been added, although the successful evaluation of a quasi-steady 'model' trial is now subject of the second volume.

Survey papers

Complete references to my work on propulsion and trials are to be found on the 'Bibliography on propulsion in general' and the 'Bibliography on ship powering trials' including links to papers and presentations on my website, of which only the introductory sections containing survey papers are documented here.

Schmiechen, M.: Future Ship Powering Trials and Monitoring Now! Principles of rational conventions further clarified, consistently applied in a particularly delicate case and lessons (to be) learned. A letter to my colleagues and my students and to whom it may or must concern, ship owners, ship buyers and ship builders, member organisations of the STA Group and governing bodies and pertinent committees of ITTC; ISO and IMO in particular. VWS Mitteilungen Heft 62, post mortem, Berlin 2013. See also 'Festschrift' Volume 1, pages 1-44.

Schmiechen, M.: Beitraege der VWS zur Erforschung der Propulsion und Bewegungen von Schiffen. STG-Nr. 3010, VWS Mitteilungen Heft 60, post mortem, Berlin 2003, 139-202. See also Paper, Slides and Complete Presentation.

Schmiechen, M.: 25 Jahre Rationale Theorie der Propulsion. Fritz Horn zum 125. Geburtstag. Prepared for the STG Summer Meeting at Magdeburg 17.-19.05.2005, which had to be cancelled. The paper has been presented at the 100th STG Annual Meeting at Berlin, held November 16 to 18, 2005. With many references to files containing detailed derivations of results. Jahrbuch STG (2005). See also Paper and Presentation. Closely related is the following theme lecture.

Schmiechen, M.: Propulsor Hydrodynamics. Theme lecture. Presented at the International Conference on Marine Hydrodynamics, MAHY 2006, held January 05 to 07 at the Naval Science and Technological Laboratory at Visakhapatnam, India. Proc. Int'l Conference in Marine Hydrodynamics 2006, Vol.2, 611-631. See also Paper, Handout and Presentation.

Schmiechen, M.: 50 Years Rational Theory of Propulsion. Recent Results and Perspectives. Paper presented at the International Symposium on Marine Propulsors smp 2009, Trondheim, Norway, June 22-24, 2009. Proceedings 1st SMP (2009) 117-128. See also Paper and Presentation.

Propulsion mechanics

Further, the rational theory of propulsion has been treated as an example of global mechanics in Chapter 22 'Propulsion mechanics' of Volume 3 'Global and propulsion mechanics' of my opus magnum:

Schmiechen, M.: Newton's Principia and related 'principles' revisited. Classical dynamics reconstructed in the spirits of Goethe, [Aristotle], Euler and Einstein. Elementary Mechanics from an advanced standpoint and vice versa. Second edition of work in progress in three volumes. Berlin, Summer 2009.

AUTHOR

In 1997 Dr.-Ing. Michael Schmiechen retired as Deputy Director, Head of Research and Development, from Versuchsanstalt für Wasserbau und Schiffbau (VWS), the Berlin Model Basin.

As ausser-planmässiger (apl.) Professor he has at the same time been released from the duty to lecture on Hydro-mechanical Systems at the Institut für Schiffs- und Meeres-Technik (ISM), Technische Universität Berlin (TUB). But since then he has continued to lecture on professional problem solving at ISM until 2011 and he is still promoting his ideas around the world.

After graduation from TUB he has studied boundary layer theory, heat transfer and combustion at the Imperial College London and, on leave of absence from VWS, systems modelling and identification as Research Fellow at the MIT Cambridge Mass. and the application of state space models to marine traffic systems, colliding ships in particular, as Visiting Professor at the Tokyo University.

The author has served ITTC as Secretary of the Executive Committee from 1969 to 1975 and subsequently five terms as Member of the Symbols and Terminology Group.

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Warning!

Reading my papers endangers Your principles!

"You cannot have a theory without principles.
'Principles' is another name for 'prejudices'."
Mark Twain: 'The Disappearance of Literature'
Speech, November 20, 1900.