

Kalmar Maritime Academy
Sjöfartshögskolan

Shiphandling - Art or Science?




Journal of Ship Research

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Manövrering



Maneuvering (US)
Manoeuvring (UK)

"Manövern är en Vettenskap, som lär att, med eller utan seglens och vindens tillhjälp, med fördel regera ett ensamt skepp vid förefallande händelser till fart, vändningar eller stillaliggande; och förekomma härvid många handarbeten, hvilkas tillämpning inbegripes under namnet Sjömanskap. Manöver kallas äfven hvar och en särskild rörelse som verkställes med ett skepp; manövrisk är den som verkställer".
(Könungens stabsadjutants och riddarens Fabian Casimir Rosvalls försök till Hjelpreda för Nybegynnare i Skepps-manövern, Stockholm 1803)

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Hydrodynamik

Hydrodynamik är en gren inom fysiken och speciellt strömningsmekaniken där man studerar vätskors rörelse. Är vätskan inte i rörelse talar man istället om hydrostatik. Resterande fluider, dvs. gaser, omfattas istället av aerodynamiken och aerostatiken. Av intresse att studera är bla. fartygs flytkraft och turbulens kring exv. fartygsskrov eller i rör.






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Shiphandling STCW-95

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
Manoeuvre the ship	Ship manoeuvring and handling Knowledge of: .1 the effects of deadweight, draught, trim, speed and under-keel clearance on turning circles and stopping distances .2 the effects of wind and current on ship handling .3 manoeuvres and procedures for the rescue of person overboard .4 squat, shallow water and similar effects .5 proper procedures for anchoring and mooring	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved training on a manned scale ship model where appropriate	Safe operating limits of ship propulsion, steering and power systems are not exceeded in normal manoeuvres Adjustments made to the ship's course and speed maintain safety of navigation

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
Manoeuvre and handle a ship in all conditions	Manoeuvring and handling a ship in all conditions, including: 18 st punkter. därav även bryggjänst och hanterande av räddningsfarkoster	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate .3 approved manned scale ship model, where appropriate	All decisions concerning berthing and anchoring are based on a proper assessment of the ship's manoeuvring and engine characteristics and the forces to be expected while berthed alongside or lying at anchor While underway, a full assessment is made of possible effects of shallow and restricted waters, ice, banks, tidal conditions, passing ships and own ship's bow and stern wave so that the ship can be safely manoeuvred under various conditions of loading and weather



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Shiphandling training, how?



On the job



Manned models



On training vessel




In simulator



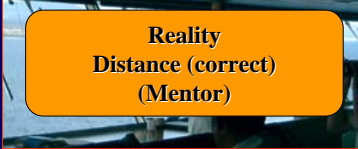
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Shiphandling training



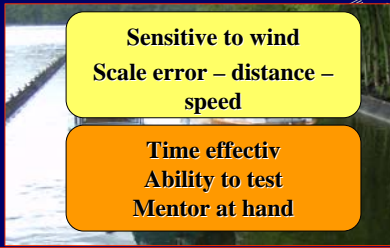
Time consuming
Expensive
No room for mistakes

Reality
Distance (correct)
(Mentor)



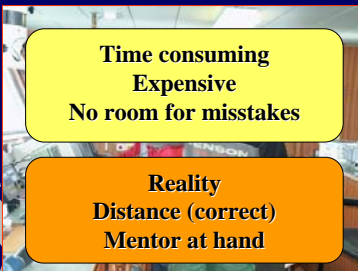
Sensitive to wind
Scale error – distance – speed

Time effective
Ability to test
Mentor at hand



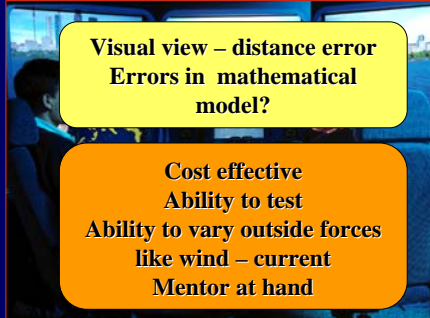
Time consuming
Expensive
No room for mistakes


Reality
Distance (correct)
Mentor at hand




Visual view – distance error
Errors in mathematical model?

Cost effective
Ability to test
Ability to vary outside forces like wind – current
Mentor at hand






SHIPHANDLING



- **How to become a competent ship handler:**
 - Understand forces that influence ship's movement
 - Ability to use forces to your advantage
 - Know the manoeuvring characteristics of your ship, effects of propellers and rudders, effects of various sea conditions
- **The six most common words when you are practicing ship handling:**
 - Go Slow,
 - Think Ahead,
 - Be Patient
- **Watch the grass...**
 - To watch a ship manoeuvre, should be as interesting as watching the grass grow.
- **If there is nothing to do - Do nothing**
- **The art of Shiphandling involves the effective use of forces under control to overcome forces not under control.**
Charles H. Cotter, The Master and His Ship



The mark of a great ship handler is never getting into a situation that requires great ship handling

- Fleet Admiral Ernest King -

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Shiphhandling





Shiphhandling

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[PPT] INTRODUCTION TO SHIPHHANDLING

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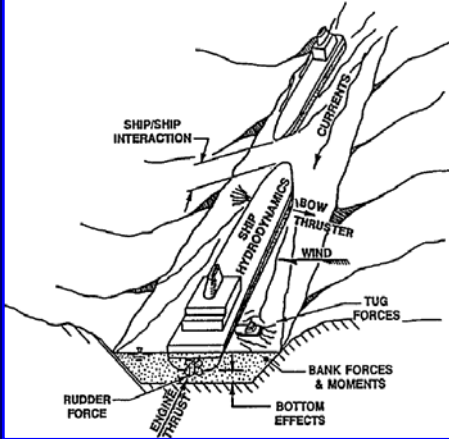
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Shiphandling Theory


- There may be more than a dozen forces acting about the vessel's axis at a given moment, and the resultant may not be as anticipated but due partially to a force which has escaped discovery. This is not 'mysticism' as much as lack of the research which takes the art of shiphandling into the finite world of applied science.

– P.F. WILLERTON,
BASIC SHIPHANDLING






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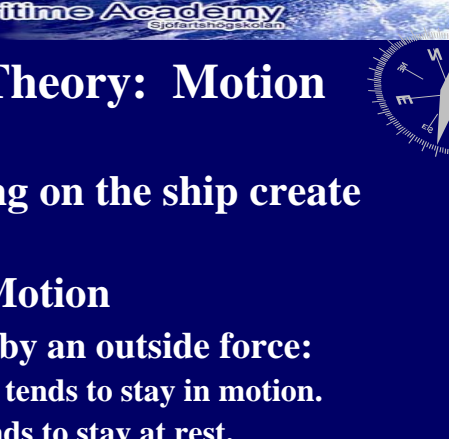



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Shiphandling Theory: Motion

- **Various forces acting on the ship create movement.**
- **Newton's Laws of Motion**
 1. Unless acted upon by an outside force:
 - An object in motion tends to stay in motion.
 - An object at rest tends to stay at rest.
 2. The resulting motion of an object is the sum of all forces acting on it.
 3. Every action has an equal and opposite reaction.






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Broström - seniorbefäl

- *Mycket lärorikt och nöjsamt*
- *Mycket informativ och rolig*
- *30 år för sent i livet*
- *Fler körningar med bogserbåtar. Mer körning från kaj också.*
- *Dela på ÖST/BFH då man har olika mycket erfarenhet.*
- *Kunde varit lite mer om olika propellrar och roderarrangemang.*


Positivt alltihop tycker jag.




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**SHIP DYNAMICS
FOR MARINERS**




I. C. Clark BSc, MSc, MNI


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**THE
SHIPHANDLER'S
GUIDE**




Captain R.W. Rowe, FNI

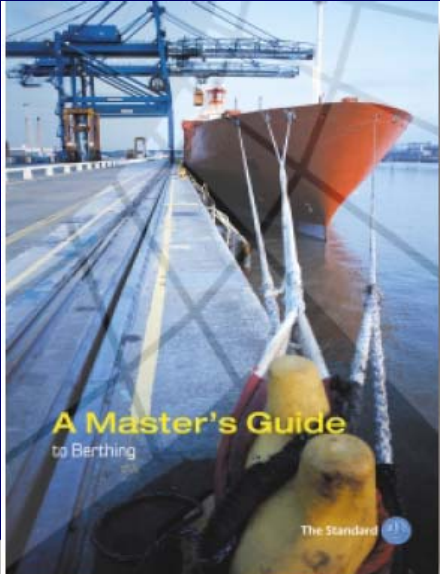
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A Master's Guide
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The Standard 

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TUG USE IN PORT

A PRACTICAL GUIDE



Captain Henk Hensen, FNI
Second Edition

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WITH AZIMUTH STERN
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