Technical Meeting — 2 December 2020

Rob Gehling, Secretary of the Australian Division and Vice President of the Pacific Region of RINA, gave a presentation on *Are Naval Architects More than Just Designers?* as a webinar using RINA's Zoom software platform with the Deputy Chair of the NSW Section, Phil Helmore, as MC on 2 December. This presentation attracted 33 participating on the evening, including the new Chief Executive of RINA, Chris Boyd, from south Wales in the UK.

Introduction

Rob began his presentation by saying that the Chief Executive of the Naval Shipbuilding College, in his presentation to the Pacific 2019 International Maritime Conference, did not include naval architects in the list of vocations to be recruited by the College for implementation of the Naval Shipbuilding Program. When questioned, he claimed that naval architects were actually included as "designers".

Subsequently, the RINA Council in May 2020 established a Working Group (WG) led by the author to look into *The Roles and Capabilities of Naval Architects*. The recommendations in the report of the Working Group, which are fairly general, were adopted in-principle by RINA Council at its October meeting, and will be considered further at the next Council meeting in January 2021, particularly with regard to the specific actions to be taken.

As the general subject was initially raised by the President of the Australian Division, and the Working Group was led by the presenter, the report is particularly pertinent for the Australian Division, and does not necessarily apply to all countries or all sections of industry. The President of RINA and the RINA Council will be faced with implementation of the recommendations!

Definitions of Naval Architecture

The WG Report contains a seven-page Annex of various peoples' ideas of appropriate definitions. Among them are the following:

- "Naval architecture is that field of engineering which addresses how we can apply our acquired wealth of knowledge to conceive of, design, test, build, and operate all types of ships and boats - recreational to naval, small to big, operating on or under the sea, sails to nuclear, etc." [US Naval Academy, Annapolis].
- "Naval Architecture is the art of modelling materials we do not wholly understand into shapes we cannot precisely analyse so as to withstand forces we cannot properly assess in such a way that the public at large has no reason to suspect the extent of our ignorance." [Phil Helmore, with apologies to A.R. Dykes from his Chairman's Address to the Scottish Branch of the Institution of Structural Engineers in 1977, who wrote it of Structural Engineering].

However, for the purposes of the WG Report, the following definition was adopted;

- "Naval Architecture, sometimes referred to as maritime engineering, is the branch of engineering that brings together the results of the practical and scientific experience of all those concerned with the design, construction and operation of ships and marine structures. This work has application to ships, boats and marine structures in the naval, commercial, recreational and offshore industry sectors".

The WG Report uses the term "naval architect" to include those who identify as maritime engineers under our branch of engineering, rather than simply relating to the shape or layout of a ship or marine structure.

Is *Naval Architect* the Correct Name?

System Architect would lose the maritime and engineering connection, but references the role in determining the configuration of a ship as the original systems engineer, integrator and architect.

Maritime Engineer may be too close to "Marine Engineer" and its use by our colleagues in IMarEST.

Changing from *Naval Architect* would necessitate a change in the name of the Institution, would lose the Institution's long and prestigious history, may prejudice our incorporation by Royal Charter and our crest, and is well beyond the remit of the Working Group.

So, for the time being, the name *Naval Architect* remains.

How to Represent Ourselves to the World?

For audiences unfamiliar with naval architecture, such as recorded technical presentations with an unknown audience, the Working Group suggested an alternative logo conveying who we are and what our business is, could be used. For example:

Image NewsNSW-GehlingRINALogo.JPG

Possible RINA Logo
(Image courtesy RINA Working Group Report)

Note that the word “platforms” was deliberately included to cover the offshore industry and those [*non-naval architects!* — Ed.] who see a ship only as a platform for its payload.

Self-identity of a Naval Architect

Are we are attracting the right students to naval architecture?

Noting that the fundamental skills of a naval architect are in ship design, do naval architects feel constrained from expanding into other areas including environmental protection, project management, production planning, production management, survey and certification, operations and sustainment?

A naval architect should have a good understanding of the total engineering of a ship to enable them to take meaningful roles at all levels in these areas.

A degree in “naval architecture” is not necessarily essential to make a substantial contribution to “the design, construction, maintenance and operation of marine vessels and structures” and so be eligible for RINA Membership.

RINA is not an education provider and should not run courses to enable individuals to operate in these areas, but may direct people towards courses

Roles and Capabilities as seen by Industry

Some industry leaders do not appear to see the naval architect’s role extending beyond design and perhaps research/development.

Industry appears to see little importance in the naval architect’s fundamental skills other than design which apply to shipbuilding processes, e.g. design modifications necessary to produce a “bought-in” design.

The role of the naval architect as the *integrator* of technologies into the ship as a working marine vehicle appears to have been progressively overlooked.

Industry overlooks the naval architect’s broad engineering understanding of the technologies in a ship and its construction which apply directly to project management, production planning and construction as well as design.

Roles and Capabilities as Seen by Employers

The roles adns capabilities as seen by Industry also apply. In addition:

Naval architects may be seen as costs which don’t add value.

Design work done during a building program for an existing design includes:

- optimising structural components and materials according to the materials and sections available in the country of build;
- adapting arrangements to meet technical or cultural requirements;
- ensuring monitoring of as-built characteristics such as stability and strength; and
- developing and incorporating design improvements in later ships of the series.

Shipbuilders need to recognise the continuum of skills represented by RINA’s range of membership classes including EngTech, IEng and CEng levels, covering detailed design through to senior management.

Roles and Capabilities as Seen by the Public

The public doesn’t necessarily associate the “naval architect” name with engineering ships and marine platforms. Professional engineers, as against trade-based “engineers” such as motor mechanics and washing machine technicians, may also suffer poor public relations.

Our profession, the Institution and the roles and capabilities of naval architects all need to have their profiles raised.

RINA should interact more with Industry and government and participate in industry dialogues on common issues. This may provide more value to RINA members and have an effect in increasing membership.

Topics outside the Working Group’s Terms of Reference

- Education is under the purview of the Professional Review Committee.
- Change from “naval architect” and of name of Institution.
- Engage professional branding and PR services.
- Endorsement of courses or publication of relevant course list.
- Professional certification to practice.
- Information on how to become a naval architect.
- Broadening graduates’ understanding of ship and shipbuilding technologies.
- Student and career mentoring/support.

Recommendations for RINA Council Action

1. The Institution needs to emphasise at every opportunity that its business is as a professional body promoting the proper and full application of knowledge in the science, technology and management of shipbuilding, marine technology and shipping as stated in its Objects.
2. RINA should raise the public profile of our profession and the roles and capabilities of naval architects and maritime engineers.
3. RINA should work with the Engineering Council, EngineeringUK, Engineers Australia and other national peak bodies for engineering to maintain and promote the image/status of not only naval architects but also professional engineers in general as compared with trade-based "engineers".
4. RINA should work with industry to emphasise the role of the naval architect as the integrator of technologies into the ship as a working marine vehicle and to emphasise that a naval architect's broad engineering understanding of the technologies integrated into a ship is directly applicable not only to design but also to production planning, ship construction and sustainment
5. The Institution should apply itself to ensuring that industry and those seeking to have ships constructed are aware that a "bought-in" design will inevitably need modifications such as:
    - optimising structural components and materials according to the materials and sections available in the country of build;
    - adapting arrangements to meet technical or cultural requirements;
    - ensuring monitoring of as-built characteristics such as stability and strength; and
    - developing and incorporating design improvements in later ships of the series.
6. To change the perceptions of naval architects being seen only as specialists by employers, RINA should:
    - Increase the breadth of its membership through visibility and encouraging joining by those in roles such as environmental protection, project management, production planning, production management, survey/certification, and operations/sustainment.
    - Encourage one- or two-year postgraduate courses in naval architecture to be provided for graduates in other disciplines of engineering.
    - Encourage students of naval architecture and offshore engineering to become Student Members participating in Institution activities.
    - Invite senior managers in major shipping and shipbuilding organisations, including navies, to become RINA members.
    - Encourage appropriately-qualified Naval Officers to become/maintain RINA membership.
    - Continue to encourage and publish papers on technical aspects of naval ships.
7. The Institution should refrain from developing "colleges" to signify to the outside world the specialties of individual naval architects, for reasons of cost and complexity of resourcing/administration for a relatively small institution.
8. The Institution needs to be able to demonstrate value to its membership, including those who are not necessarily qualified in naval architecture, and to employers in the maritime industry, as the pre-eminent professional society in maritime engineering worthy of paying fees and sponsoring events.
9. Specifically with regard to technical meetings, the current situation with regard to COVID-19 brings to prominence a number of risks and opportunities which must be addressed promptly through the following:

- For now, Branch/Section technical meetings should be virtual/online meetings.
- Technical meetings need not involve presenters and participants meeting in one location; this may improve the availability and quality of technical presentations and increase the visibility of our activities.
- To broaden technical meeting audiences, sponsoring Branches/Sections should publicise each event with other Branches/Sections in nearby time zones.
- RINA technical presentations should be branded along lines shown earlier.
- Adequate number and capacity of channels is required for RINA meetings.

Conclusion

RINA Council convened a Working Group in May 2020 to look into *The Roles and Capabilities of Naval Architects*. The Working Group reported back to Council, and the recommendations in the report, which are fairly general, were adopted in-principle by RINA Council at its meeting in October 2020.

However, Council is looking for further input from as wide a cross-section as possible and, to this end, comments and ideas from all participants is sought, both now at this presentation and subsequently—for which a form will be circulated to all meeting participants. Comments are due to the Secretary of the Australian Division of RINA by 7 January 2021 to allow time for compilation and forwarding to London.

Input from all sources will be considered further at the next Council meeting in January 2021, particularly with regard to the specific actions to be taken.

Question/Comment time elicited some further interesting points.

Rob’s presentation was recorded, and is now available on the RINA YouTube channel (see *The Internet* column).