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Córdoba 2122 - C.P. 1120 - CABA, 2º Piso.
TE: 5285-6826
Dirección electrónica: ceeed@fce.uba.ar / ceeed@econ.uba.ar
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Índice

Dossier
"La construcción y reparación naval en perspectiva histórica. Estudios de caso"
coordinado por Cintia Russo

Presentación

La presente edición del *Anuario Centro de Estudios Económicos de la Empresa y el Desarrollo* (CEEED) contiene el dossier "La construcción y reparación naval en perspectiva histórica. Estudios de caso", coordinado por Cintia Russo. Reúne colaboraciones sobre la industria naval en cuatro países -Brasil, España, Noruega y Corea del Sur-, cada uno de los cuales combina una primera parte general sobre el desarrollo del sector y una segunda enfocada en un estudio de caso. La introducción, a cargo de la editora del volumen, contextualiza los distintos trabajos poniendo el foco en los cambios experimentados a nivel internacional por la industria de la construcción naval desde la década de 1980, en las características específicas del sector y en el rol desempeñado por el Estado en su desarrollo. El dossier se completa, como es habitual, con una reseña bibliográfica.

La publicación del presente número representó un importante esfuerzo colectivo de todo el equipo editorial y de los evaluadores externos. Resaltamos especialmente los aportes de estos últimos, pues han contribuido con sus apreciaciones a enriquecer los textos de los autores.

Equipo Editorial

Dossier

La construcción y reparación naval en perspectiva histórica. Estudios de caso.

coordinado por Cintia Russo

Introducción

La industria de construcción naval: a modo de presentación

Cintia Russo[1]
Universidad de Buenos Aires, Facultad de Filosofía y Letras,
Departamento de Geografía
Universidad Nacional de Quilmes,
Departamento de Economía y Administración.

La internacionalización de la economía en las últimas décadas y la consecuente intensificación de los intercambios han beneficiado a la construcción naval y a las industrias navieras, responsables de la producción y operación de los buques mercantiles que están en el corazón del comercio mundial.

A partir del incremento de la magnitud y la velocidad de circulación de los flujos de capital y la disminución de barreras arancelarias al intercambio de mercancías, el sector de la construcción naval experimentó, desde los años 80 del siglo XX, una fuerte concentración de la oferta y la relocalización internacional en pocos países y regiones, principalmente, hacia los países asiáticos. Para 2017, casi la totalidad de las embarcaciones de gran porte (en términos de toneladas de porte bruto, TPB), el 96%, se construyó en una quincena de países, entre los que figuran los casos estudiados en este volumen. De ese conjunto, China, Corea y Japón representaron el 83% del mercado mundial (Gráfico 1).

Hasta la segunda guerra mundial, la industria naval pesada se realizaba en los astilleros de Estados Unidos y Europa. Desde entonces, los EE. UU han perdido peso en el mercado mundial. La Ley Jones[2], que pro-

[1] cintiarusso@gmail.com
Orcid: https://orcid.org/0000-0003-0827-2812

[2] *Merchant Marine Act* of 1920 también conocida como *Jones Act* es una ley federal, de corte proteccionista, que regula el comercio marítimo en los Estados Unidos. Esta ley exige que los bienes enviados entre puertos de EE. UU se transporten en barcos construidos, poseídos y operados por ciudadanos de los Estados Unidos o residentes permanentes. También se conoce como la Ley de la Marina Mercante de 1920.

tege a la industria naval imponiendo restricciones a los barcos de cargas domésticas y que ha influido decisivamente en la construcción de barcos comerciales, no ha impedido la declinación de la industria naval americana desde fines del siglo XX.

El proceso de relocalización y concentración de la industria naval desde las dos últimas décadas del siglo XX tuvo como contraparte una profunda reconversión productiva en los astilleros de antigua tradición con epicentro en Europa, que se difundió hacia la década del 1990 a Latinoamérica y Oceanía.

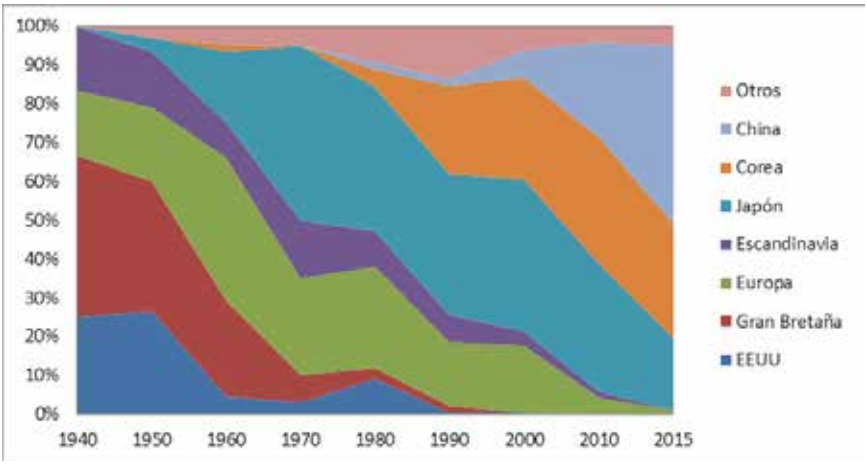
Ahora bien, en los países con mayores salarios, fundamentalmente europeos, la industria naval perdió importancia al tiempo que se eliminaron progresivamente los subsidios estatales. El caso de la construcción naval británica es un excelente ejemplo de esta tendencia. Todavía a principios de la década de 1970, los astilleros británicos tenían la capacidad de construir todo tipo de embarcaciones. Pero a partir de entonces la construcción naval se ha reducido a un pequeño número de establecimientos especializados en contratos de defensa, yates de lujo y reparación.

Esta tendencia también se registra en otros países europeos, donde se han desarticulado las políticas proteccionistas. Aún así, en su conjunto los astilleros europeos siguen siendo un factor de peso a nivel mundial dada su participación en determinados nichos de mercado. Teniendo en cuenta que la construcción naval es en gran medida una industria de ensamblaje en la que el valor agregado está integrado por insumos proporcionados por el sector de equipos marinos, se observa que Europa representa el 50% del suministro mundial (BAL, 2014). Por otra parte, la fabricación de cruceros se concentra en cuatro países europeos: Alemania, Italia, Francia y Finlandia. Este es un nicho de mercado que diferencia principalmente a los productores por calidad, tecnología, servicios y precios.

Los países asiáticos que han liderado el mercado mundial de construcción de barcos desde los años 70 son Japón, Corea y China. Japón inició desde los años 50 un proceso de acelerado crecimiento apoyado en una política de estado que sentó las bases de la reconstrucción de su estructura industrial. La construcción naval jugó un papel decisivo en este proceso y para los años 70, Japón compartía con Europa el control del 90% del mercado mundial. Gradualmente la industria naval japonesa fue desplazando la hegemonía europea (Song, 2003). Desde los años 70, también como parte de la estrategia estatal, el sector naval fue uno de los motores de la economía de Corea del Sur. Japón dominó la construcción naval por más

de tres décadas, hasta finales de los años 90, pero perdió progresivamente su ventaja competitiva frente a Corea del Sur, que en principio tenía salarios mucho más bajos y un fuerte respaldo estatal. Corea superó a Japón en 2003, y desde entonces la cuota de mercado japonesa ha caído sostenidamente. Así en 2009 su presencia en el mercado mundial registraba una caída por debajo del 50% y la demanda nacional pasó a tener mayor peso (Shin y Ciccantel, 2009). Desde la primera década del siglo XXI, China replicó los modelos japonés y coreano con grandes inversiones estatales (Michael Dillon, 2010).

Gráfico 1.
Participación en el mercado mundial de construcciones navales por región, 2018 (% en TPB)



Fuente: elaboración propia a partir de datos obtenidos en: OECD (2016), Imbalances in the shipbuilding industry and assessment of policy responses, https://www.oecd.org/industry/ind/Imbalances_Shipbuilding_Industry.pdf (consultado el 11 de julio 2019). UNCTADSTAT (2018), consultado en https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx, 15 agosto 2019).

Participación en el mercado mundial de construcciones navales, 2017

La actividad naval fue uno de los sectores que sustentaron la estrategia del Estado coreano, que se proponía transformar la economía desde un modelo agrícola de subsistencia hacia uno industrial ("arroz por industria") (Won, 2003). Corea es un caso paradigmático de influencia de la política industrial en el desempeño global de la economía. Las políticas de fomento se iniciaron en la industria liviana y luego en la pesada y de alto valor agregado, demostrando así la gran capacidad del Estado para estimular nuevas tecnologías frente a la cambiante dinámica del mercado global (Amsdem, 1989). De tal manera que la trayectoria de la industria naval coreana desde los años 70 respondió claramente a los estímulos de las políticas públicas, logrando la convergencia virtuosa de sus objetivos con los intereses de las grandes corporaciones.

El financiamiento de los astilleros coreanos, vital para el sector, fue el resultado de la articulación del sector bancario y el sector público, que explican el crecimiento industrial general y naval en particular. Efectivamente, cuando Hyundai Heavy Industry (HHI), uno de los *chaebols* más importante del país y la mayor compañía de construcción de barcos en Corea, comenzó a exportar en los años 70, recibió el apoyo financiero del gobierno para crecer y enfrentar la competencia del mercado internacional[3]. En la década de 1980, la industria naval coreana transformó su capacidad de producción desde pequeños barcos costeros hacia la construcción de grandes embarcaciones marítimas (graneleros, petroleros, portacontenedores, y otros). Dos décadas más tarde, en 2005, concentraba el 37,7% del mercado mundial (Shin y Ciccantel, 2009).

Actualmente, Corea lidera la producción de grandes embarcaciones como los super petroleros, cruceros, *bull carriers*, buques de perforación, estructura *off-shore* y grandes contenedores. Los astilleros más grandes del mundo están en Corea del Sur: Hyundai Heavy Industries, Samsung Heavy Industries y Daewoo Shipbuilding & Marine Engineering (cuadro 1).

[3] Las compañías del sector naval lideradas por HHI y el estado coreano articularon sus objetivos en los planes quinquenales del gobierno (particularmente entre 1971 y 1981): se le otorgó a HHI un monopolio temporario sobre la estructura de acero, el gobierno ordenó la importación de crudo transportado por HHI, dieron subsidios para infraestructura y adquirieron crédito internacional para HHI. (Shin y Ciccantell, 2009).

Desde inicios del siglo XXI, China comienza a proyectarse como el gran campeón asiático. China, constructor naval emergente, superó a Japón y a Corea del Sur durante el período de crisis financiera mundial de 2008-2010.

Cuadro 1.
Los astilleros más grandes del mundo, 2015

Astillero	Millones de TPB	% en la producción mundial
Hyundai Heavy Industry* (Corea)	5.8	15.9
Daewoo (Corea)	2.6	7.1
Samsung (Corea)	1.8	4.9
Imabari (Japón)	1.4	3.8
Shanghai Waigaoqiao (China)	0.9	2.4

(*) Incluye Hyundai HI, Hyundai Samho HI, Hyundai Mipo and Hyundai HI (Gunsan).

Fuente: OECD.

El actual desempeño de la industria naval china se puede explicar recorriendo su trayectoria en las últimas tres décadas. A partir de la reforma económica, en los tempranos años 80, el gobierno chino creó la empresa estatal, *China State Shipbuilding Corporation* (CSSC). Si bien este astillero seguía produciendo para la armada, reorientó su producción hacia el mercado civil. China adaptó la política industrial para el sector naval aplicada en EE.UU en su momento de despegue, la japonesa de la década de 1950, y la surcoreana de la década de 1970. En este sentido, reformularon y adaptaron los objetivos de política industrial hacia el sector naval centrados en ciertos ejes. Revalorizaron el papel de la industria naval por sus efectos derrame virtuosos en dos sentidos: por un lado, hacia la industria en general (la industria del acero, del hierro, de la maquinaria y de la electrónica) y, por otro, hacia la generación de empleo, que en el

caso chino, es una de sus ventajas competitivas que combina abundante mano de obra con bajos salarios relativos[4].

Para el año 2010, China era el primer productor mundial de barcos, si bien los principales astilleros del mundo en cuanto a capacidad de producción siguen siendo coreanos (Shin y Ciccantel, 2009)[5].

Los tres países asiáticos que han liderado el mercado mundial de construcción de barcos en los últimos cincuenta años -Japón, Corea y China- resultan un ejemplo contundente de la forma en la que el Estado crea las condiciones de posibilidad y desempeño exitoso del sector naval.

Características de la industria naval pesada

Históricamente, la industria de la construcción naval ofrece una amplia gama de tecnologías, es intensiva en capital y emplea un número significativo de trabajadores, generando ingresos para las economías nacionales dada su importancia en el comercio internacional.

La industria naval pesada integra la rama metalmecánica y, al igual que la industria automotriz, se la denomina "concurrente" o de "síntesis" debido a que es fuerte demandante de equipos, insumos e instalaciones que provienen de una gran diversidad de sectores manufactureros. Como sector estratégico, el naval es la base para una serie de interfaces industriales, y fuente de innovaciones tecnológicas y organizacionales con efectos derrame virtuosos hacia otros sectores. El producto que la industria naval pesada elabora integra el equipamiento productivo de otras actividades, entre los que se pueden nombrar embarcaciones para defensa, transporte de carga, pesqueros, transporte de pasajeros, embarcaciones auxiliares, para el turismo, para la investigación, dragas, plataformas extractivas y plataformas costa afuera.

[4] En 2002 el salario mensual promedio de un trabajador chino rondaba los 325 dólares, mientras que en Corea del Sur y Japón alcanzaban los 1.800 y 2.400 dólares, respectivamente. Si bien actualmente los salarios en China tienen una tendencia creciente siguen siendo relativamente menores con respecto a sus vecinos asiáticos (Shin y Ciccantell, 2009).

[5] Mientras que los astilleros chinos abastecen el mercado interno, Corea del sur orienta su producción de barcos hacia la exportación.

Construcción y reparación de barcos de gran porte

El sector naval pesado	Condiciones de producción, operación y comercialización
Tipo de industria	Estratégica, en términos de inserción en el comercio mundial
Localización	Concentrada en países asiáticos (China, Corea y Japón, 83% en 2017)
Los astilleros mas grandes del mundo en 2015	Hyundai Heavy Industry
Grado de influencia en la economía nacional	Alto, por sus efectos derrame en el aparato productivo y en el mercado laboral (empleos directos e indirectos)
Tipo de producción	Concurrente, demandante de equipos, insumos e instalaciones que provienen de una gran diversidad de proveedores
Unidad productiva	Astillero (construye y repara embarcaciones)
Tipo de bien	Alto valor unitario, fabricados por unidad o en cantidad limitada
Tiempo de entrega	Dos a tres años
Factor de la producción intensivo	Capital y trabajo intensivos (RRHH de alta calificación). Trabajo intensivo para buques de bajo valor agregado y equilibrado para naves de alto valor agregado.
Comerciabilidad	Muy alta, la financiación juega un papel importante en los buques mercantes
Reorientacion hacia otras áreas	Especialmente off-shore, pero implica grandes riesgos; reparación y mantenimiento de buques
Heterogeneidad de productos	Alta entre tipos de embarcaciones
Demanda	Expansión del comercio marítimo, reemplazo de embarcaciones, regulaciones
Posibilidades de invención e innovación	Limitadas

Fuente: elaboración propia.

Una empresa de construcción naval o astillero tiene como actividad fundamental construir buques y artefactos[6], para lo cual está dotado con medios de halaje y botadura y/o puesta en seco de instalaciones para construir el casco. Asimismo, en el astillero se realizan otras tareas como pueden ser las reparaciones e incluso la fabricación de determinados equipos. Puede fabricar, entonces, otros elementos que integran el equipamiento productivo de diversas actividades, como equipos o elementos para el armamento de los barcos que construye o para suministro de otros, equipamiento ferroviario, estructuras metálicas complejas; puede montar distintos componentes muchos de los cuales son a su vez bienes de capital provistos por otras ramas de la industria (motores, generadores eléctricos, grúas, radares, entre otros). A su vez, la actividad de reparación es de suma importancia dado que los barcos son bienes de larga vida útil, de un alto valor y de un fuerte desgaste, lo cual requiere de un permanente mantenimiento para posibilitar una eficiente explotación en términos tanto físicos como económicos (Coscia, 1981).

Por su peculiaridad y la variedad de elementos con los que trabajan, los modelos organizativos de los astilleros pueden ser muy distintos: el astillero que fabrica todo lo que necesita -*el astillero integrado autosuficiente*- y el que se apoya en la industria disponible y que de hecho es una instalación de síntesis o de montaje del producto final -*el astillero de montaje*-. Estos modelos pueden corresponder a etapas históricas diferentes. Tenemos así que el modelo de astillero autosuficiente es propio de momentos o circunstancias del desarrollo de un país con una incipiente industria pesada, con un aparato productivo con escasa posibilidad de suministrar lo que el barco requiere y obliga al astillero a integrar su producción estimulando la fabricación de todo lo que necesita. Un astillero de estas características es generalmente una empresa pública. Cuando la industria auxiliar de un país está suficientemente desarrollada como para poder obtener de la misma o del resto del mundo globalizado todo lo que requiere la construcción de un buque, se concibe que pueda haber (y de hecho hay) astilleros cuya única misión sea adquirir, montar, probar y entregar el barco como tal. Se parte entonces de todo lo que otras entidades productivas han fabricado y se adapta a los requisitos y las especificaciones de construcción.

[6] Embarcaciones para defensa, transporte de carga, pesqueros, transporte de pasajeros, embarcaciones auxiliares, para el turismo, para la investigación, dragas, plataformas extractivas, plataformas off shore.

Podemos caracterizar a la construcción y reparación de barcos dentro de lo que se ha dado en llamar "bienes complejos" (Hobday, 1998 y 2000; Davis y Hobday, 2005). Se trata de productos "basados en proyectos", de un alto costo unitario y "hechos a medida"[7]. En este sentido, en contraste con los que se fabrican en serie, los bienes complejos tienen un alto componente de ingeniería, un importante valor agregado (ya sea ingenieril o científico-tecnológico) y son fabricados por unidad o en una cantidad muy limitada. En algunos casos se usan componentes estandarizados, pero cuyo diseño e integración en el producto final suponen la fabricación de un tipo "único" para cumplir los requerimientos de clientes particulares. De allí también que el cliente o usuario sea parte "participante" y no tan solo "interesada" en el proceso de producción.

Si bien la construcción o reparación de un buque implica el ensamblaje de elementos de distinta complejidad (importados o fabricados en el mismo astillero, incluido diseño y motores) el resultado final es un producto singular. En efecto, el buque de gran porte posee especificaciones definidas por el armador o demandante y el astillero. En tanto bien de alto valor unitario, la construcción de un buque requiere lapsos en general más prolongados que los de otros bienes de capital. De ahí que se trate de una industria capital y mano de obra intensiva y altamente calificada. Por ello, las certificaciones de calidad están ampliamente difundidas y, en algunos casos, son obligatorias de acuerdo con las diferentes legislaciones nacionales. Los certificadores son quienes se encargan de evaluar, y controlar la calidad de los componentes y la capacidad del personal empleado, así como del proceso de producción.

El proceso productivo que caracteriza a la industria naval pesada presenta un significativa proporción de "mano de obra calificada", esto es, profesionales, y trabajadores con un alto grado de calificación y autonomía en la resolución de problemas[8]. Si bien la formación de los trabajadores navales puede desarrollarse en las escuelas técnicas, que muchas veces

[7] Ejemplos de este tipo de productos son los aviones, los buques de gran porte, los reactores nucleares, las locomotoras, los satélites, los sistemas informáticos complejos, los sistemas de telecomunicación, los simuladores de vuelo, entre otros.

[8] Distintos profesionales y técnicos participan en cada etapa productiva: ingenieros navales, ingenieros mecánicos, arquitectos navales e ingenieros electricistas, técnicos y obreros altamente calificados y especializados (caldereros, carpinteros, electricistas y soldadores).

funcionan dentro de los propios astilleros, debe culminar en los talleres a cargo de los maestros en el oficio ya que se trata de procesos de aprendizaje de largo plazo, de *learning by doing*. En consecuencia, la cultura, la tradición y la acumulación de capacidades tecnológicas de la industria naval de un país juegan un papel esencial en la viabilidad presente y futura del sector (Katz y Kosacoff, 1998).

Por otra parte, cabe enfatizar, los efectos-derrame virtuosos y las intensas articulaciones productivas que estimula la industria naval. De hecho, cuando la industria naval pesada produce con baja capacidad ociosa influye positivamente en el entramado industrial: por cada empleo directo, se generan entre 2 y 3 empleos indirectos en las industrias subsidiarias y de servicios, también llamada industria naval-partista. Esta es una de las características del sector que supone generación de empleo y un proceso de acumulación de largo plazo de capacidades tecnológicas que se sustenta en la formación de mano de obra especializada, técnicos, profesionales e incluso en la capacitación de los proveedores naval-partistas. La construcción y la reparación de embarcaciones se apoya en esta industria subsidiaria que le provee tanto bienes e insumos (chapa naval, motores, generadores, equipos eléctricos y electrónicos, y otros), como así también servicios (pintura, mecánica, y otros)[9]. Los 'naval-partistas', como proveedores especializados, son parte del proceso de fabricación de un barco y, en muchos casos, realizan sus actividades dentro del astillero y participan, directamente, en el proceso productivo de la embarcación, en plena complementariedad y cooperación con el astillero.

Hasta fines de los años 80, muchos astilleros realizaban la producción de gran parte de los componentes del barco con una fuerte integración vertical de la producción. Sin embargo, el proceso de internacionalización del capital en los umbrales del siglo XXI implicó, en el sector naval, el traslado de la producción a zonas de mano de obra barata y la externalización de determinadas actividades. Desde los insumos básicos hasta las terminaciones de carpintería de un buque, se pueden identificar varios eslabones en la cadena de valor para la construcción de una embar-

[9] Los productores naval-partistas están vinculados con una variada gama de actividades industriales, aparatos de control eléctrico, distribución de electricidad, motores, cables, chapa naval, turbinas, productos laminados de acero y hierro y otros bienes metálicos, engranajes, tuberías, válvulas, aparatos de iluminación, mobiliario, equipos frigoríficos y productos plásticos.

cación de gran porte. En la construcción del barco que es entregado por un astillero a una empresa de fletes para iniciar su tráfico marítimo han intervenido trabajadores y profesionales españoles, alemanes, finlandeses, indios, americanos, que participan en la producción de acero, pinturas, cables eléctricos de alta resistencia, tubos, motores complejos, ordenadores y las diferentes áreas del diseño e ingeniería del buque.

La mano visible del Estado

Tradicionalmente la industria naval, aunque con matices según los países, ha sido apoyada por una política estatal de subsidios, créditos y beneficios impositivos, tanto para las empresas armadoras como para los astilleros. Este conjunto de medidas hicieron de esta industria una actividad fuertemente subvencionada en todo el mundo. El Estado participa como potencial cliente, como financiador de las iniciativas o directamente como actor involucrado en la producción.

Estas funciones de promotor, regulador, productor, demandante, y proveedor o articulador de mecanismos de financiamiento han generado las condiciones de posibilidad de la rama naval en aquellos países donde ha tenido un desarrollo significativo. Así pues, el Estado implementa el marco legal que sustenta el esquema normativo de estímulo a la industria, regula las condiciones de navegación, y establece las disposiciones sobre los tripulantes y sobre el resto de los navíos circulantes. Como productor el Estado crea y administra astilleros y talleres públicos para construir y reparar barcos. En su papel de promotor, el Estado destina significativas inversiones hacia la generación de infraestructura básica que incremente la capacidad instalada de los astilleros a través de obras públicas, en especial la construcción de gradas o diques secos. Esta función de promotor de la industria naval no se limita a garantizar externalidades de infraestructura económica sino que también crea las condiciones del sistema de ciencia y tecnología articulado con los centros de formación de enseñanza e investigación y capacitación específica. Asimismo, a través de las empresas públicas, se sostiene la demanda a los astilleros nacionales. En tanto proveedor o articulador de mecanismos de financiamiento, el Estado tiene una función clave para la industria naval.

Por las características y los tiempos de la construcción y reparación de barcos, 'basados en proyectos o diseños específicos', de un alto costo unitario y generalmente 'hechos a medida', la industria naval depende de

la capacidad de crédito que no se contempla adecuadamente en los canales de financiamiento privado. Si bien los armadores suelen tener financiación propia, en general, exigen mecanismos de liquidez inmediata. Por lo tanto, en la mayoría de los países con industria naval, el Estado despliega un papel de proveedor de créditos y da garantías para la actividad, porque durante la prolongada fabricación, el barco no puede constituirse en garantía real. Es en este sentido que el financiamiento se convierte en uno de los cuellos de botella para esta industria que produce bienes complejos, bienes de capital con un alto costo unitario, con extensos tiempos de construcción, y riesgos de pérdida del capital invertido por oscilaciones del mercado. Es en este sentido que el financiamiento previo y de largo plazo es una de las condiciones de posibilidad del sector, y por lo tanto la política industrial orientada a generar mecanismos de financiamiento se torna clave. Por otra parte, el sector naval pesado es un sector estratégico que juega un papel central en la inserción de los países en el comercio internacional.

Las industrias navales aquí estudiadas habrían demostrado a lo largo de su trayectoria una signficativa dependencia con respecto a la capacidad del Estado para ejercer un papel integral. Con diferentes características según el caso, las políticas públicas generaron las condiciones que fortalecieron el entramado productivo e institucional y el marco normativo que promovieron la construcción naval.

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La presente publicación es una compilación de diferentes recorridos analíticos referidos al sector naval pesado para cuatro casos nacionales: Brasil, España, Noruega y Corea. Los autores han partido de perspectivas de análisis, miradas y fuentes muy diversas. En cada capítulo se considera primero la trayectoria del sector para luego afinar la mira hacia la historia de un astillero en particular. En este sentido, los autores reconstruyen la realidad de los astilleros (Caneco en Brasil, Bazán/Navantia en España, Grupo Aker en Noruega, Hyundai Heavy Industries en Corea) y de las condiciones de trabajo con el objetivo de desentrañar, a nivel micro las tendencias que se proyectan a nivel global en la industrial naval en los países considerados.

Con diferentes abordajes y desarrollos se incluyen en cada capítulo las etapas de la industria naval y de sus establecimientos productivos.

En este sentido, se analiza la relación entre estas etapas y las característics de la intervención estatal, es decir, cómo se implementan las políticas públicas orientadas a la industrialización en cada periodo, y particularmente hacia el sector naval pesado, las formas organizativas del proceso productivo y su influencia en las relaciones laborales dentro los astilleros. Se considera asimismo la organización y la calificación de la fuerza de trabajo en la industria naval de cada país. Por otra parte, se dedica especial atención a las efectos del contexto internacional y de la reestructuración global del sector a la vuelta del siglo XXI, en la producción, el empleo y las economías nacionales.

Reunidos en torno a un eje temático centrado en una rama productiva, los autores recorren un periodo que cubre desde mediados del siglo XX hasta la primera década del siglo XXI. A partir de un abanico de aspectos, incorporados en cada caso de estudio con diferente intensidad, no se logra un conjunto homogéneo. Los enfoques, las hipótesis y las fuentes con las que los investigadores elaboraron sus trabajos son disímiles. Tal vez, allí radica la riqueza de este volumen.

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A indústria naval no Brasil: três momentos de impulso estatal e a crise atual

Elina Gonçalves da Fonte Pessanha[1]
Instituto de Filosofia e Ciências Sociais de la Universidade Federal do Rio de Janeiro, Conselho Nacional de Pesquisa (CNPq), Arquivo de Memória Operária de Rio de Janeiro

Luisa Barbosa Pereira[2]
Universidade Federal do Rio de Janeiro, Arquivo de Memória Operária de Rio de Janeiro, Grupo de Estudio de Historia de Trabajo Global IHC, Universidade Nova de Lisboa, Proyecto In the Same Boat del Instituto de História Amsterdam Social (IISH)

Resumo

Este artigo recupera, em grande parte, outros textos que publicamos sobre a indústria de construção naval no Brasil, sendo alguns no âmbito do projeto internacional "No mesmo barco? Trabalhadores da construção e reparação de navios, uma história de trabalho global", sediado no Instituto de História Social de Amsterdam[3]. Articulamos inicialmente a contribuição de Peter Evans (1993 e 2004) sobre o papel do Estado na promoção da economia, às de Schmitter (1971) e Schneider (1991) sobre como, na burocracia estatal, alguns órgãos se tornam lugares de maior eficiência e estimulam o desenvolvimento, para refletir sobre o caso brasileiro.

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[1] elina.pessanha@gmail.com
Currículo Lattes: http://lattes.cnpq.br/0392987249249095
Orcid: https://orcid.org/0000-0001-8443-1534
[2] luisabpereira@gmail.com
Currículo Lattes: http://lattes.cnpq.br/2862713194715310
Orcid: https://orcid.org/0000-0002-6808-2001
[3] Ver, por exemplo: Pessanha e Pereira 2016.

Começamos por descrever a trajetória do setor naval durante o século XX e neste século XXI. Em seguida, apresentamos a história de um estaleiro que se fez presente nas várias fases de crescimento e de crises que a indústria naval brasileira enfrentou. O artigo apresenta as fases em que a indústria naval brasileira recebeu estímulo e apoio do Estado para o seu desenvolvimento, assim como os períodos em que, sem esse suporte estatal, o setor entrou em crise. O caso do estaleiro Caneco, depois Rio Nave, um dos mais antigos do país, serve de breve ilustração dos problemas da indústria, através da história.

Palavras-Chave:

Brasil; construção naval; intervenção do Estado; estudo de caso.

The naval industry in Brazil: three stages of active intervention of the state and the current crisis

Abstract

This article largely recovers other texts that we publish about the shipbuilding industry in Brazil, some of them under the international project "In the Same Boat? Shipbuilding and repair workers, a global work history" based at the Amsterdam Institute of Social History. We initially articulate Peter Evans's (1993 and 2004) contribution on the role of the state in promoting the economy, and Schmitter's (1971) and Schneider's (1991) contribution on how, in state bureaucracy, some organs become more efficient and stimulate development to reflect on the Brazilian case. We begin by describing the trajectory of the naval sector during the twentieth century and in this 21st century. Then we present the story of a shipyard that was present in the various phases of growth and crises that the Brazilian shipbuilding industry faced.

The article presents the phases during which the Brazilian naval industry received state stimulus and support for its development, as well as the periods in which, without this state support, the sector went into crisis. The case of Caneco shipyard, later Rio Nave, one of the oldest in the country, serves as a brief illustration of the problems of the industry throughout history.

Keywords:

Brazil; shipbuilding industry; state intervention; case study.

Introdução

Este artigo recupera, em grande parte, outros textos que publicamos sobre a indústria de construção naval no Brasil, sendo alguns no âmbito do projeto internacional "No mesmo barco? Trabalhadores da construção e reparação de navios, uma história de trabalho global", sediado no Instituto de História Social de Amsterdam[4]. Articulamos inicialmente a contribuição de Peter Evans (Evans 1993 e 2004) sobre o papel do Estado na promoção da economia, às de Schmitter (1971) e Schneider (1991) sobre como, na burocracia estatal, alguns órgãos se tornam lugares de maior eficiência e estimulam o desenvolvimento, para refletir sobre o caso brasileiro. Começamos por descrever a trajetória do setor naval durante o século XX e neste século XXI. Em seguida, apresentamos a história de um estaleiro que se fez presente nas várias fases de crescimento e de crises que a indústria naval brasileira enfrentou.

1. A Indústria Naval Brasileira e o Estado

A indústria naval brasileira se desenvolveu de forma extremamente atrelada às políticas, planos, leis, subsídios e taxas de financiamento, promovidos ou concedidos pelo Estado brasileiro. O Estado agiu não só como financiador de estaleiros privados e proprietário de estatais, mas, principalmente, como cliente central do setor e regulador de seus rumos. Dessa forma, quando tais estímulos cessavam, a indústria mergulhava num processo de retração. Como alguns estudos apontam, no entanto, esse processo não deve ser encarado de uma perspectiva unilinear, que obscurece inteiramente o peso relativo que setores da sociedade civil, como o empresariado industrial e os sindicatos de trabalhadores, tiveram na implantação de nosso projeto capitalista periférico (Forjaz 1984). Neste texto, destacamos o papel primordial do Estado, mas reconhecemos a necessidade de análises mais apuradas que deem conta da complexidade de todo o processo e do papel dos outros diversos atores nele envolvidos.

[4] Ver, por exemplo: Pessanha e Pereira 2016.

Podem ser identificados, a partir do início do século XX, três fases fundamentais desses estímulos estatais, que chamaremos aqui de "impulsos à indústria naval", com efeitos contraditórios sobre a organização produtiva e seus resultados, além do emprego e as condições de trabalho dos operários do setor. Um primeiro impulso iniciou-se na década de 1930, com o avanço industrial do período, a fundação da Companhia Siderúrgica Nacional (1941) e culminou com o Plano de Metas do governo Juscelino Kubistchek (1956-1961). O segundo, no período em que o Brasil vivia uma ditadura militar (1964-1985), pautou-se numa maior exploração da mão de obra, extensão da jornada de trabalho e forte repressão sindical para garantir, com a introdução de novas tecnologias e métodos de trabalho, altos índices de produtividade. Após um período de retirada do apoio do Estado ao setor, e de uma consequente retração profunda da produção e do volume da mão de obra da segunda metade de 1980 até o início dos anos 2000, a indústria naval viveu, principalmente após o ano de 2003 e o governo de Luiz Inácio Lula da Silva, o seu terceiro impulso. Com o amparo estatal e a demanda politicamente orientada da Petrobras, empresa estatal de economia mista, exploradora de petróleo, cujo acionista majoritário é o Governo do Brasil, a indústria naval recuperou-se. Entretanto, em anos recentes, mudados os rumos da economia e da política, o Estado outra vez retirou o apoio à indústria e esta se encontra em situação muito difícil, quase falimentar.

1.1 O primeiro impulso: indústria naval pesada e Plano de Metas (1930-1964)

A partir de 1930 emergiu um novo padrão de acumulação no Brasil, mais voltado para industrialização e alcançando o setor de transportes. Inaugurava-se um período de forte centralização do poder, em que o projeto de transformar o Brasil e promover o seu desenvolvimento, foi pouco a pouco ganhando contornos mais nítidos e se concretizando através de políticas públicas diversas.

O chamado "trabalhismo" de Getúlio Vargas,[5] composição bem orquestrada de demandas privadas setoriais, aspirações dos trabalhadores urbanos (os "Trabalhadores do Brasil" como eram sempre interpelados) e interesses do grande latifúndio, forneceu a base ideológica que permi-

[5] Ver Gomes 1988.

tiu ao Estado atuar, dos anos 1930 à década de 1950, na criação de infraestrutura (Companhia Siderúrgica Nacional, Petrobrás), promoção da indústria (orientação de investimentos, política de subsídios) e regulação das relações de trabalho (a Consolidação da Legislação Trabalhista em 1943). Embora mantendo os compromissos com as classes dominantes tradicionais (agrárias, comerciais), Vargas teria optado pela implantação de um novo padrão de crescimento centrado na indústria (Furtado 1959; Castro 1969; Tavares 1972).

Na área de transportes, fundamental para a viabilização desse projeto, o Plano Geral de Viação Nacional, de 1934, definiu as rodovias como as principais vias integradoras do mercado nacional no país. Com a priorização dada pelo governo ao setor rodoviário, o transporte via trens ou navios se tornou mais escasso. Em 1940, entretanto, foi criada a empresa estatal Serviço de Navegação da Bacia do Prata[6], e em 1941, a Comissão da Marinha Mercante (CMM), uma autarquia subordinada ao Ministério dos Transportes que tinha como objetivo disciplinar a navegação.[7] A CMM garantiu à União o direito de explorar, conceder e autorizar os serviços da navegação, marítima, fluvial e lacustre, e regulamentou a presença do Estado no setor, iniciada com a criação do Lloyd Brasileiro. E ainda, com a morte em 1941 de Henrique Lage, proprietário da Companhia Nacional de Navegação Costeira, o governo se apropriou de seus empreendimentos e a sua Cia tornou-se estatal.[8]

Mas, apesar de tais iniciativas, foi principalmente desde o final da década de 1950 que o setor naval brasileiro viveu um período de maior estímulo governamental e investimento. O aço só foi amplamente introduzido na indústria de construção naval após a Segunda Guerra. Até os anos 1936, a origem da matéria-prima utilizada era a seguinte: madeira, aço, ferro fundido (exceto as partes integrantes de máquinas), bronze, ligas, tintas e vernizes nacionais; 90% de laminados, 20% do material para instalação elétrica, 80% das máquinas, 90% de maquinários e equipamentos importados. O avanço da industrialização e o progresso do setor

[6] A Bacia do Prata é formada pelas sub-bacias dos rios Paraná, Paraguai e Uruguai e por seus respectivos afluentes. Ocupa uma área de 4,3 milhões de km² em territórios argentino, boliviano, brasileiro, paraguaio e uruguaio.
[7] Goularti Filho 2010, 250.
[8] Pessanha 2012, 33.

eletro-metal-mecânico viabilizaram a adoção de técnicas mais avançadas de construção, baseadas no uso do aço para a produção das embarcações nacionais.[9]

O Brasil contava, na metade do século XX, com 119 armadores privados, sendo o maior deles a Cia de Comércio e Navegação com uma frota de 18 navios. As grandes bacias hidrográficas do país eram exploradas por três autarquias federais: a Serviço de Navegação da Amazônia e de Administração do Porto do Pará (SNAPP), criada em 1940; a Serviço de Navegação da Bacia do Prata (SNBP), criada em 1943; e a Companhia de Navegação do São Francisco (CNSF), criada em 1955. No transporte de longo curso atuavam a Lloyd Brasileiro (com 24 navios), a Frota Nacional de Petróleo[10] (FRONAPE, com 25 navios) e a Companhia Siderúrgica Nacional (CSN, com 2 navios). Estas eram responsáveis por 3,9% das exportações e 10,5% das importações.[11]

A partir de 1956, em consonância com os padrões de industrialização pesada expressos no Plano de Metas do presidente Juscelino Kubistchek (1956-1961), a indústria naval brasileira passou por uma mudança bastante significativa, amparada pelos subsídios e incentivos do Estado e pela estreita relação deste com o capital privado da indústria naval internacional. Já no primeiro ano do governo o ministro da Viação e Obras Públicas, Lúcio Meira, apresentou um estudo sobre a situação da marinha mercante nacional, identificando o baixo índice de participação das embarcações nacionais nos fretes do comércio exterior e os altos encargos pagos pelos fretes internacionais.[12] Assim, o Conselho de Desenvolvimento da Presidência da República propôs o reaparelhamento do setor a partir de duas propostas, que deveriam ser escolhidas pelo governo: estatização ou liberalização. A gestão de Juscelino Kubistchek (JK) optou pela segunda.

O governo JK foi, sem dúvida, um dos que mais apoiou a indústria naval. Tal estímulo, entretanto, privilegiou o capital privado e internacional, em detrimento das companhias estatais. De acordo com as análises do governo à época, não havia capital privado nacional capaz de assumir a Cia Costeira e a Lloyd Brasileiro, o que justificaria a atração de empresas

[9] Pessanha, 2012, 45.

[10] A Fronape foi criada em 1949 e incorporada pela Petrobrás em 1952. Posteriormente passou a fazer parte da Transpetro, subsidiária da Petrobras.

[11] Goularti Filho 2010, 253.

[12] Pessanha 2012, 46-47.

multinacionais. Por isso foi criada uma linha de financiamento específica para renovar a frota e desenvolver a indústria naval através do investimentos do capital estatal e externo.[13]

O governo criou a Taxa de Renovação da Marinha Mercante (TRMM), que incidia em 15% sobre os fretes líquidos de cabotagem, e o Fundo da Marinha Mercante (FMM), composto basicamente pelos recursos da Taxa arrecadada junto às companhias de navegação estrangeiras, oficiais e armadores nacionais que operavam navios estrangeiros afretados. O Fundo tinha como objetivos evitar a importação de embarcações e diminuir os custos com o afretamento de navios estrangeiros; incitar a renovação, a expansão e a recuperação da frota mercante nacional; garantir encomendas à indústria de construção naval; e estimular a exportação de embarcações. Os recursos eram recolhidos pelo BNDE (Banco Nacional de Desenvolvimento Econômico) numa conta especial administrada pela CMM.

Formou-se também o Grupo Executivo da Indústria da Construção Naval (GEICON), ligado ao Conselho de Desenvolvimento. O GEICON, que passou a elaborar normas para projetos voltados à construção naval, criava dificuldades à compra de navios estrangeiros e favorecia a importação de equipamentos para a construção de navios.[14] Foi responsável pela aprovação de projetos de ampliação dos principais estaleiros privados do país e pela vinda de grupos estrangeiros: beneficiou o Estaleiro Mauá, a Indústria Reunidas Caneco, o Estaleiro Emaq, o Estaleiro Só (único fora do Rio de Janeiro), a empresa japonesa Ishikawajima Heavy Industries (Ishibrás)[15] e a holandesa Verolme United Shipyards (Verolme).[16] O Grupo ainda orientou a construção de três diques secos para navios até 35 mil TPB. O custo total do programa executado foi avaliado em US$ 8,6 milhões.[17]

Em termos da transformação do sistema produtivo, pode-se afirmar que nesse período foi criada a "base técnica de produção de navios metálicos de porte superior a 1000 tpb no país". (Motta Veiga, 1984). A

[13] Documento do Conselho de Desenvolvimento, p. 7, 1956 (*apud* Goularti Filho, 2010, 254).

[14] Pessanha 2012, 47.

[15] O estaleiro Ishibrás foi o responsável pela introdução de métodos toyotistas na indústria naval, embora sua difusão a outros estaleiros não tenha tido sucesso.

[16] O estaleiro que recebeu o maior financiamento do BNDE foi o estaleiro Mauá. Ver: Pessanha, 2012, 47.

[17] Lessa 1983, 50.

introdução de novas técnicas (basicamente o uso de soldagem automática, permitiu a pré-montagem de seções inteiras do navio e avançado acabamento) e novos sistemas de planejamento de produção (como a expansão de desenhos e modelos), essas mudanças refletiram as experiências de construção naval após a 2ª. Guerra Mundial, que alcançaram o Brasil na segunda metade dos anos 50, principalmente através do exemplo da indústria japonesa.

Desta forma, o Estado reforçou sua posição de estimulador da consolidação da indústria naval, gerindo e repassando um grande volume de recursos voltados ao desenvolvimento do setor. A indústria naval pesada nascia também, portanto, de forma vinculada e dependente do segmento estatal.

1.2 O segundo impulso: golpe militar, exploração do trabalho e "milagre econômico"

Apesar de, na década de 1960, o parque industrial naval estar formado e as importações de novos navios suspensas, a produção dos estaleiros sofreu um declínio em virtude da desorganização da administração portuária, da ação desarticulada dos armadores, dos altos custos de produção e da expansão dos estaleiros. A inflação no Brasil registrou taxas altíssimas entre 1963 e 1964, chegando ao patamar de 91,9% em 1964, [18] mas o Estado manteve o seu interesse no desenvolvimento do setor naval.

João Goulart, presidente do Brasil antes do golpe de 1964, havia formulado o "Programa de Construção Naval 1963-1965", dentro do Plano Trienal de Desenvolvimento Econômico e Social.[19] Mas o Programa, que previa a construção de 33 embarcações, acabou cancelado pelo governo militar que impôs uma ditadura ao Brasil até 1985. A estratégia adotada a partir de então voltou-se para a privatização das companhias nacionais.

Entre 1964 e 1967, a produtividade dos estaleiros nacionais continuou baixa.[20] Em 1966 o Governo do Marechal Castelo Branco (1964-1967) transformou a Lloyd Brasileiro e a Cia Costeira em sociedades anônimas, retomando o processo de privatização e abertura ao capital externo. A primeira passou a se dedicar apenas aos serviços de cabo-

[18] Bresser-Pereira e Nakano 1984, 107.
[19] Goularti Filho 2010, 257
[20] Pessanha 2012, 59.

tagem e a segunda aos reparos navais. Foram estabelecidas regras de reciprocidade no tráfego marítimo entre o Brasil e outros países, com a garantia de 40% da participação de navios sob bandeira nacional nos fretes de comércio exterior. Até então apenas a Lloyd Brasileiro poderia responder por essas linhas.[21]

Em 1966, a Cia Costeira foi dissolvida e abriu-se um espaço ainda maior para as companhias privadas de navegação. Nesse mesmo ano, a fusão de 13 pequenas companhias deu origem a Cia Libra de Navegação. Esta, juntamente com a Companhia Paulista de Comércio Marítimo, a Frota Oceânica Brasileira, a Empresa de Navegação Mercantil (antiga Comércio e Navegação), a L. Figueiredo Navegação e Netúnia Sociedade de Navegação, a Docenave (setor de navegação da Companhia Vale do Rio Doce, criada em 1962), a FRONAPE e o Lloyd Brasileiro, compunha o grupo de companhias de longo curso beneficiadas pelos planos de construção naval.[22]

Entre 1964 e 1967, na verdade, o Estado se retirou do centro da produção naval, estimulando uma atitude mais autônoma dos estaleiros e armadores. Mas manteve seu apoio, através de subsídios, financiamento dos estaleiros privados e absorção de grande parte de sua produção. Essa política sofreu uma inflexão a partir da gestão do General Costa e Silva (1967-1969), que adotou um padrão de desenvolvimento mais calcado em grandes investimentos do Estado, tanto em bens de consumo durável quanto nas indústrias de bens de capital, com destaque à indústria naval. Lançou, logo no início de seu governo, o "Plano de Emergência para Construção Naval" (1967-1970) que tinha como objetivo a encomenda de 10 cargueiros e 20 embarcações pequenas (Goularti Filho 2010, 258).

Em 1969, através do Decreto 64.125 de 19 de fevereiro, o governo transformou a Comissão da Marinha Mercante em Superintendência Nacional da Marinha Mercante (SUNAMAM), uma autarquia mais centralizada, financeiramente poderosa e atuante. A SUNAMAM passou a ter o controle sobre a navegação marítima e fluvial, a elaboração de planos para a construção naval e a liberação de recursos do Fundo da Marinha Mercante.[23] Além disso, foram realizadas medidas de ampliação da participação da bandeira nacional no tráfego de longo curso, o que beneficiava diretamente o setor.

[21] Pessanha 2012, 60.
[22] Goularti Filho 2010, 259.
[23] Como indicam os Decretos-Lei 11.143/1970, 67.992/1970 e 73.838/1974. Disponíveis em http://www6.senado.gov.br/sicon. Acesso em 13/09/2013.

O tráfego geral de cargas adotou o critério 40-40-20 onde 40% do transporte de cargas era realizado por navios de bandeira brasileira, 40% por navios de bandeira do parceiro comercial do Brasil e 20% por navios da chamada terceira bandeira. As cargas importadas destinadas às empresas estatais ou aos órgãos governamentais, somente poderiam ser transportadas por empresas nacionais de navegação, que tiveram reserva igualmente das conferências de exportação de café, cacau e algodão.[24]

Foram medidas como essas que garantiram que entre os anos 1970 e 1980 quase toda a importação de granéis ficasse reservada às companhias nacionais. Ampliou-se consideravelmente a participação da bandeira brasileira (navios próprios ou afretados) no longo curso, passando de 3,9% em toneladas em 1958, para 34,6% em 1970 e 49,6% em 1980,[25] graças aos benefícios estatais a alguns grupos privados.

Com o fim do Plano de Emergência, as encomendas do setor voltaram a ter queda, evidenciando, mais uma vez, a forte dependência desta indústria ao Estado. Os militares, para reverter essa tendência, promoveram o I Plano de Construção Naval (I PCN - 1971 a 1974) no governo do General Emílio Médici (1969-1974); o II Plano de Construção Naval (II PCN - 1974 a 1979); e o Plano Permanente da Indústria Naval, estes dois últimos, no governo do General Ernesto Geisel.

A implementação progressiva do primeiro Plano da Construção Naval – I PCN (1971-1974) pela ditadura militar, correspondeu à consolidação de novos métodos administrativos e industriais: o aumento da mecanização e automação do processo de preparação do aço, o uso extensivo de solda, melhoria considerável na capacidade de movimentação de placas e blocos no interior dos estaleiros (com o uso de macacos hidráulicos e guindastes), difusão e aplicação de acabamento avançado, centralização de sistemas de planejamento e controle da execução da obra, redefinindo a relação entre setores de projetos e produção.

A partir daí, foram superqualificados, por um lado, técnicos ligados aos setores de preparação do trabalho e desqualificados, por outro, muitos trabalhadores especializados, tornando-se mesmo, alguns, completamente desnecessários. Alteraram-se a hierarquia profissional e a relação dos operários com máquinas e ferramentas. Abriu-se assim o campo para

[24] Goularti Filho 2010, 259.
[25] Goularti Filho 2010, 260.

a rotinização e a banalização de trabalhos e para a difusão da polivalência dos operários antes especializados, já que a própria procura de navios se padronizara um pouco.

Assim o setor naval – beneficiado em grande parte pelo chamado "milagre econômico brasileiro"[26] – entre 1970 e 1974 cresceu 183% às custas de uma maior exploração da mão de obra e extensão da jornada de trabalho (enquanto o emprego no setor cresceu apenas 18%)[27]. De fato isso ocorria num momento de forte repressão ao movimento sindical, num país governado, desde 1968, sob a vigência do Ato Institucional n. 5, que dava poderes absolutos ao regime ditatorial e suprimia direitos civis e políticos. Esse período ficou marcado como um dos mais sombrios e repressores da história nacional.

Como mostram Bresser-Pereira e Yoshiaki Nakano em *Inflação e Recessão,* com a ditadura militar (e especialmente entre 1964 e 1974), a inflação que se mantinha desde o início da década de 1960, tendeu a reduzir-se, já que os trabalhadores pagavam a conta da política inflacionária em termos de redução de salário. No decorrer da década de 1970, quando o movimento sindical recuperou em parte seu peso político, no contexto das manifestações do chamado "novo sindicalismo" [28] e as perspectivas de uma transição política para a democracia afloraram, os trabalhadores passaram a exigir melhores salários e condições de trabalho.[29]

Mas esses anos trouxeram também os reflexos da chamada crise do petróleo, redesenhando a produção e circulação de mercadorias, com impactos sobre a indústria naval: a queda da produção de tanques, ligados ao segmento do petróleo, e que correspondia a 79,73% da produção mundial, refletia o declínio geral. O Brasil, no entanto, se beneficiava da situação crítica do setor naval nos países produtores tradicionais e do aumento

[26] O milagre econômico brasileiro, também chamado de "anos de chumbo" foi um período de grande crescimento econômico nacional, concentração de renda e repressão, entre 1969 e 1973. Ver, entre outros: Gaspari 2002.0

[27] Pessanha 2012, 62.

[28] O "novo sindicalismo" foi um movimento que surgiu no final da década de 1970 no ABC paulista e tinha como principal liderança o ex-presidente Luiz Inácio Lula da Silva. Setores dinâmicos do operariado urbano paulista iniciaram um processo de grandes mobilizações sociais, greves, questionamento da estrutura sindical e trabalhista. A formação da Central Única dos Trabalhadores (CUT) é também resultado de todo esse processo de acúmulo

[29] Bresser-Pereira e Nakano 1984, 106.

de sua capacidade produtiva, estimulada pelos planos governamentais. Num quadro de desaceleração das potências mundiais deste segmento, o Brasil e outras nações alcançaram as mais altas posições no ranking de produção naval. Segundo pesquisa da Lloyd's Register do Brasil, na virada dos anos 1970 para 1980 o Brasil teria chegado ao segundo lugar em volume de encomendas de embarcações.[30]

O chamado "milagre econômico", contudo, não se manteve por muito tempo. As encomendas do II PCN não foram entregues e parte das dívidas não foram pagas. A indústria começou a apresentar sinais claros de dificuldades, sofrendo finalmente os efeitos da crise que atingia a economia mundial, e que impediram a concretização do III Plano Nacional de Desenvolvimento do Governo Federal, esvaziando as oportunidades de investimento.

O aumento brutal do preço do petróleo travou as demandas de embarcações brasileiras nos anos 1980. Os principais armadores nacionais, estatais (Petrobras e Vale do Rio Doce), deixaram de realizar encomendas; o governo extinguiu o subsídio a fundo perdido para os estaleiros e decidiu abandonar a participação direta no financiamento das embarcações; diminuiu-se o prazo de financiamento de navios em 5 anos, passando de 15 para 10 anos.

Com a escassez dos financiamentos e obras, e o início da retração do Estado como promotor do setor, os estaleiros recorreram a grandes volumes de empréstimos bancários, respaldados pela SUNAMAM. A autarquia iniciou um procedimento financeiro considerado pouco ortodoxo, de aceite de duplicatas emitidas pelos estaleiros e negociáveis na rede bancária, e a emissão de cartas de crédito. A indústria mergulhava numa profunda crise, que levaria à retração do setor e a uma lenta agonia de seus operários.

Neste crítico cenário econômico, a atuação da SUNAMAM foi diretamente questionada, ainda durante o último governo militar, do General João Figueiredo (1979-1985). Descobriu-se, além de diversas outras irregularidades, que um grande volume de repasses de recursos da SUNAMAM para os armadores havia sido realizado sem qualquer controle.

[30] Nossa pesquisa de campo, entretanto, evidenciou a existência de contestações, por parte dos atores sociais que participaram desse momento, aos dados da época. Informações coletadas em entrevistas realizadas indicam que o Brasil nunca chegou a tal patamar de produção de TPB na década de 1970.

Nesse cenário de profunda desconfiança, as negociações entre armadores e estaleiros também foram paralisadas e contribuíram para tornar o quadro ainda mais crítico.[31]

Em 1986, durante o processo de reabertura política, e já na gestão do primeiro presidente civil após 1964, José Sarney (1985-1990), o Ministério dos Transportes sugeriu reformas para o setor, privilegiando o papel do Conselho Diretor do Fundo da Marinha Mercante em detrimento da SUNAMAM. No mês de janeiro de 1989, através da Medida Provisória 27, foram extintos 14 órgãos da administração federal, incluindo a autarquia. Suas competências foram transferidas para a recém-criada Secretaria de Transportes Aquáticos (STA).[32]

Apesar da frota brasileira ter aumentado de 400 mil TPB em 1930 para 9,5 milhões de TPB em 1983, ainda era insuficiente para a demanda nacional e a dependência de embarcações estrangeiras de mantinha. Dados da SUNAMAM mostram que em meados da década de 1980 o percentual de navios estrangeiros em relação à carga transportada na exportação correspondia a cerca de 80% do total.[33]

A Marinha possuía a frota armada, navios de transporte e o Arsenal da Marinha do Rio de Janeiro; o Ministério de Minas e Energia possuía a maior frota mercante sendo a da Petrobras (de petroleiros), Docenave (de graneleiros), e a Vale do Rio Doce (de navegação). O Ministério da Indústria e Comércio possuía navios de cabotagem para transporte de carvão através da Companhia Siderúrgica Nacional (CSN) e o Ministério dos Transportes, através da SUNAMAM, controlava a Companhia de Navegação do São Francisco, a Serviço de Navegação da Bacia do Prata, a Empresa de Navegação da Amazônia, que por sua vez era responsável pelo Estaleiro de Reparos e Construção Naval Vai-de-Cans e o Lloyd Brasileiro. O Lloyd era responsável ainda pela Lloyd Libra Navegação e a Cia de Transportes Intermodal, a Empresa Brasileira de Reparos Navais S.A, a Cia de Transportes Integrados Lloydbrati, a Graninter Transportes

[31] As investigações sobre o chamado "Escândalo da SUNAMAM" foram desenvolvidas a partir de 1984. Em fevereiro de 1985, pressionado pelas dívidas, o proprietário do Estaleiro Mauá cometeu o suicídio, logo após chegar à sede administrativa da empresa, no centro do Rio de Janeiro (Jornal do Brasil, ed. de 8/2/1985, p. 1).

[32] Goularti Filho 2010, 264-265.

[33] Conforme dados da SUNAMAM. Ver: Pereira 2012, 52.

Marítimos do Graneis S.A e a Cia Navegação da Amazônia.[34] Com a crise, toda essa estrutura ruiu e o Estado se afastou do setor.

No final da década de 1980, a indústria da construção naval, operava com uma capacidade ociosa de quase 60% e empregava cerca de 18 mil trabalhadores. A frota do Lloyd Brasileiro, que circulara por cerca de 250 portos em todos os continentes, foi se tornando obsoleta, assim como as dos outros principais armadores privados.

1.3 O terceiro impulso: a volta do apoio do Estado ao setor no século XXI

Nos anos 1990, num cenário político já comprometido com as teses de inspiração neoliberal que orientavam o processo de globalização, a situação econômica serviu como justificativa para que os governos de Fernando Collor/Itamar (1989-1994) e Fernando Henrique Cardoso (1995-2002) promovessem inúmeras privatizações, desnacionalizações, fechamento de autarquias, cortes nos investimentos e abertura comercial e financeira. Assistimos ainda uma forte dinâmica especulativa, alta mobilidade de capitais e juros altos. As políticas de desenvolvimento nacional foram deixadas de lado e os objetivos da macro conjuntura econômica se sobrepuseram. A recessão foi acrescida do aumento exponencial do desemprego. Nesse contexto, a infra-estrutura logística do país foi sucateada. Com a Portobrás (Empresa de Portos do Brasil S.A.) extinta, as operações portuárias privatizadas, aumentou o número de terminais privativos e o Lloyd Brasileiro entrou no Plano Nacional de Desestatização. Suas embarcações foram progressivamente leiloadas por preços muito abaixo do mercado.

A opção dos referidos governos foi pela diminuição da intervenção do Estado nas esferas da vida social e econômica. A ausência de financiamento ao setor e o plano de desnacionalização de empresas estatais estimulou a abertura da indústria naval brasileira aos grandes grupos internacionais entre os anos 1990 e 2000. Tal fato contribuiu ainda mais para a concentração do setor nas mãos das grandes companhias de navegação.[35]

[34] Pessanha 2012, 238.

[35] Goularti Filho 2010, 269.

A Flumar (fundada em 1970) foi vendida em 1996 para o grupo francês LDA e o norueguês KGJS; a Aliança (1950) para a alemã Hamburg Sud.[36] em 1998; a Libra (fundada em 1966) para chilena Companhia Sudmericana de Vapores (CSAV) em 1999; e a Mercosul Line (1999) para o grupo dinamarquês Maersk em 2006. A Cia Mercantil (antiga Cia. Comércio e Navegação, do Estaleiro Mauá), a Netumar, a Interunion, a Paulista e a Viamar, faliram na década de 1990.[37] O quadro era de desmonte do setor nacional.

Além disso, na segunda metade da década de 1990 algumas contraditórias medidas ligadas ao segmento do petróleo, que teoricamente objetivavam a retomada da indústria naval, foram realizadas pelo governo de Fernando Henrique Cardoso. Em 1995 o Congresso Nacional aprovou uma medida que autorizou a União a contratar, com empresas estatais ou privadas, a pesquisa e lavra de jazidas, refino do petróleo nacional ou importado, importação e exportação de petróleo, derivados e gás natural, transporte de petróleo, derivados e gás natural.

Em seguida foi aprovada a Lei do Petróleo (n. 9478 de 1997), que revogou a legislação de Vargas relativa ao monopólio estatal da União em relação à pesquisa, refinamento e transporte de petróleo e gases raros no território nacional. A nova lei abriu o mercado de petróleo no Brasil, estimulou a exploração *offshore*, incitou a contratação de serviços de embarcações para apoio marítimo e expôs a indústria nacional ao setor externo.[38] A indústria naval nacional perdeu espaço para a concorrência internacional.[39]

Foi nesse mesmo ano de 1997 que a multinacional anglo-holandesa Shell entrou no mercado brasileiro de gás natural comprando parte das ações da Companhia de Gás de São Paulo (Comgás) e a norte-americana

[36] A alemã Hamburg Sud, uma das maiores companhias de navegação do mundo, também adquiriu no mesmo ano as linhas para a Europa da Transroll, fundindo esta Cia à Aliança. Ver Goularti Filho 2010, op. cit., pp. 267-268.

[37] A Cia Mercantil faliu em 1988; a Netumar em 1994; a Interunion em 1996 e tanto a Paulista e quanto a Viamar em 1999.

[38] Furtado 2002.

[39] Alguns autores, entretanto, indicam esse período de abertura e a Lei do Petróleo como fundamentais para a recuperação que se seguiria posteriormente no país. Ver, por exemplo, Pasin 2002 e Jesus e Gitahy 2009.

Chevron (Texaco). Instalou seu escritório de Exploração e Produção de petróleo no Rio de Janeiro. Em 2001 foi a vez da norueguesa Statoil. [40]

A frota nacional passou de 9,5 milhões de TPB em 1983 para 6,08 milhões TPB no ano 2000, e a participação de navios com bandeira brasileira, que já estava em queda, declinou de 49,6%, em 1980, para 21,0% na década de 1990. O emprego no setor, que em 1979 chegou a atingir o índice de 39.155 trabalhadores, caiu para apenas 1.880 operários em 1998. O BNDES (Banco Nacional de Desenvolvimento Econômico e Social, desde 1982), que cumprira papel de estimular a industrialização no Brasil, se tornou o coordenador do Programa Nacional de Desestatização.

O desmonte do setor nacional de navegação foi consolidado com a privatização do Lloyd Brasileiro em 1997 (em 1993 fora privatizada a Docenave), a desnacionalização e a quebra de armadores nacionais. A indústria naval, fortemente atrelada ao poder público estatal, dependente não só do financiamento da produção, como também da absorção da demanda produzida, sem esse apoio mergulhou numa crise profunda.

Numa tentativa de reverter esse quadro, em 1999 foi lançado o Programa de Apoio Marítimo (PROREFAM) pela Petrobras, que estabeleceu no edital de concorrência internacional a exigência de navios de bandeira brasileira. Segundo o programa, a montagem dos módulos nas plataformas e a finalização das unidades de produção deveriam ser feitas no Brasil, estimulando assim a produção nacional.[41] A Petrobras licitou e contratou 22 embarcações, porém três contratos foram cancelados e o Programa, em sua primeira fase, não surtiu impacto significativo para o setor.

Em dezembro de 2000, no segundo mandato do governo de Fernando Henrique Cardoso, foi lançado o Programa Navega Brasil que previa a compra de três novos navios para a Petrobras, na ordem de 160 milhões de reais, distribuídos para três estaleiros cariocas. O Programa passou a utilizar a maior parte das verbas do antigo Fundo de Marinha Mercante (FMM)

[40] Conforme informações disponíveis nos sites das empresas, ver: http://www.shell.com/bra/aboutshell/centenary/first-100-years/1990.html; http://www.statoil.com/brazil/pt/about/pages/default.aspx
http://www.chevron.com.br/negocios/nossa-historia.aspx, Acesso em 30 de setembro de 2013.

[41] Jesus 2013, 57.

Tabela 1
Volume de produção e numero de trabalhadores (1960-1998)

ANO	EMPREGA-DOS	TPB CONTRA-TADAS	TPB ENTRE-GUES	SALDO
1960	1.430	73.320	0	73.320
1961	5.850	37.300	3.100	107.520
1965	11.600	118.160	15.740	338.870
1970	18.000	197.900	101.850	541.200
1971	18.500	1.349.550	174.000	1.716.750
1972	19.200	262.800	314.600	1.664.950
1973	20.000	384.700	259.500	1.790.150
1974	21.500	3.272.380	310.650	4.751.880
1975	23.000	1.965.920	474.600	6.243.200
1976	25.000	24.300	586.000	5.681.500
1978	31.000	203.640	820.680	4.543.860
1979	39.155	553.400	1.394.980	3.702.280
1980	33.792	337.300	1.193.800	2.845.780
1981	34.472	1.252.700	1.183.180	2.915.300
1985	21.463	599.975	772.814	2.219.211
1990	13.097	440.000	420.790	1.887.391
1996	5.562	65.120	235.150	759.092
1997	2.641	138.000	110.237	786.855
1998	1.880	6.000	149.117	643.738
TOTAL TPB		15.817.035	15.173.297	--------

Fonte: Sinaval (Sindicato Nacional das Indústrias de Construção Naval), *Revista do BNDES*, 2002.

para a recomposição da frota e aumentou a participação limite do FMM nas operações da indústria naval em 5%. Modificou ainda o acesso às linhas de crédito para estaleiros e armadores, dilatou o prazo máximo do empréstimo para a construção naval em 5 anos, de 15 para 20.[42]

A Petrobras, contudo, continuava a fazer novas encomendas de plataformas no exterior. A capacidade ociosa do setor no país era extremamente alta e não existiam regras especificando o grau de nacionalização das embarcações, o que fragilizava todo o setor. Em 1999, das 12 unidades de produção encomendadas pela Petrobras, apenas uma estava sendo construída no Brasil. O Estado voltava à cena para estimular o setor naval, porém muito timidamente.

Quando a produção nacional começa a ser retomada nos anos 2000, a defasagem técnica do setor naval era enorme; havia um deficit de mão de obra qualificada extraordinário. A maior parte dos trabalhadores qualificados não estavam mais acessíveis para trabalhar e transmitir seus conhecimentos às novas gerações.

Apesar das ações realizadas antes de 2003, foi principalmente a partir do governo de Luiz Inácio Lula da Silva (2003-2010) que um novo ciclo desenvolvimentista foi inaugurado, com claros efeitos para a retomada da indústria naval do país.

> "Impulsionada pelas encomendas crescentes da Petrobras desde 2001 e especialmente pela exigência de compras de fornecedores locais introduzidas pelo governo Lula em 2003, a indústria naval brasileira renasceu nesta década e já é a sexta maior do mundo. As encomendas aos estaleiros e os novos investimentos somam R$ 55 bilhões, pelos cálculos do BNDES (Banco Nacional de Desenvolvimento Econômico e Social). São 195 embarcações já contratadas ou com a construção anunciada. A cifra coloca o país atrás de China, Coreia, Japão, União Europeia e Índia, mas à frente dos Estados Unidos. Em 2000, a indústria tinha menos de 2.000 empregados. Hoje, são 45 mil soldadores, mecânicos, entre outros trabalhadores. O número deve aumentar nos próximos anos com a instalação prevista de cinco novos estaleiros -cada um pode ter até 3.500 funcionários. Existem 25 estaleiros no país -todos privados, mas 2 foram arrendados à Petrobras.

[42] Goularti Filho 2010, 269.

> Cada nova unidade receberá investimentos de até R$ 1 bilhão e serão erguidas nos Estados de Alagoas, Bahia (duas, possivelmente), Espírito Santo e Rio -polo histórico da indústria naval e onde está a maior parte dos estaleiros do país." (*Jornal Folha de São Paulo*, 29 de novembro de 2009)

Em 2003 a Petrobras lançou o Programa de Mobilização da Indústria Nacional de Petróleo e Gás Natural (Prominp) e no ano seguinte, em 2004, o Programa de Expansão e Modernização da Frota de Apoio Marítimo (Promef). O Promef, parte do Programa de Aceleração do Crescimento (PAC) do Governo Federal, se consolidou como principal programa desta nova fase da indústria naval. Era gerido pela Transpetro, subsidiária da Petrobras, e a maior armadora da América Latina e principal empresa de logística e transporte de combustíveis do Brasil, atendendo atividades de transporte e armazenamento de petróleo, derivados, álcool, biocombustíveis e gás natural.

O Programa teve como premissa a construção de navios no país com um índice de nacionalização de materiais e peças da ordem de 65% na sua primeira fase e de 70% na segunda, além da garantia de modernização e construção de estaleiros. Outras iniciativas importantes, relativas ao financiamento, contribuíram também para esse período de retomada.[43] O FMM, entretanto, continuou sendo a principal fonte de recursos para os projetos da Marinha Mercante e da indústria de construção e reparação naval do país. Foi ampliado o número de agentes financeiros dos recursos do FMM, passando a incluir todos os bancos públicos federais.[44]

Logo foram introduzidas novas técnicas produtivas. A principal mudança foi de reorganização da produção, com a redução de fornecedores diretos e exigência de suprimentos *just in time*, com sistemas e blocos pré-montados. A indústria tornou-se uma indústria de montagem mais rápida envolvendo uma grande cadeia de produção. Por outro lado, as equipes responsáveis pela gestão de fornecedores e processo de planejamento

[43] Como a Lei n. 10.893 de 2004, que consolidou a Legislação do Adicional de Frete para a Renovação da Marinha Mercante (AFRMM) do FMM, e a Resolução n. 3.262 de 2005, do Conselho Monetário Nacional.

[44] Até então o BNDES era o único agente capacitado a atuar. Todavia, apesar do aumento do escopo de possíveis financiamentos, este banco continuou como principal agente financeiro do fundo. Guedes 2003, 52.

Figura 1
Estaleiros do Brasil

Fonte: SINAVAL.

ganharam importância especial dentro do estaleiro e os sistemas de gestão se tornaram mais sofisticados (Favarin et al 2011). A prática de pré-montagem do navio se consolidou. Os painéis são mais modernos, as peças do navio vem para o estaleiro já cortadas, prontas para se encaixar.

É importante destacar que a progressiva consolidação do setor incluiu também um forte movimento de expansão geográfica dos estaleiros, que foram espalhados estrategicamente pela longa costa marítima brasileira, de norte a sul, em nove estados além do Rio de Janeiro (onde se concentrava mais de 90% da produção até a crise dos anos 1990).

Assim, entre 2009 e 2013 o Brasil manteve um desempenho estável no setor.[45] O país já ocupava em 2012 posição de destaque no mercado

[45] Apesar de bastante inferior ao dos maiores produtores de TPB do mundo, os líderes asiáticos.

offshore internacional de embarcações, como mostravam estatísticas divulgadas pelo SINAVAL, naquele ano, a partir de informações fornecidas pelo provedor de dados sobre indústria naval Clarksons (SINAVAL, op. cit., 2012).

No final de 2013 o governo anunciou a segunda fase do PROREFAM, que consistiu na contratação de 30 novas embarcações e 21 modernizações e jumborizações. O 3º PROREFAM, que ocorreu no âmbito da Política de Desenvolvimento Produtivo (PDP), previa a contratação de 146 embarcações de apoio que deveriam atender ao conteúdo local mínimo, no período 2008–2014.[46]

No âmbito do emprego, o crescimento no setor naval nacional também foi extremamente significativo. Segundo dados do Sindicato Nacional de Construção e Reparação Naval e *Offshore* em 2007 o número de empregados saltou para 40 mil. Em 2010, para 78.400.

1.4 A indústria naval brasileira hoje

O que se pôde observar nos últimos anos, depois do período de grande recuperação com as iniciativas principalmente do governo de Lula da Silva, foi o progressivo desmonte de todo o parque industrial recuperado e criado com a expansão geográfica dos estaleiros que aquele governo promoveu.

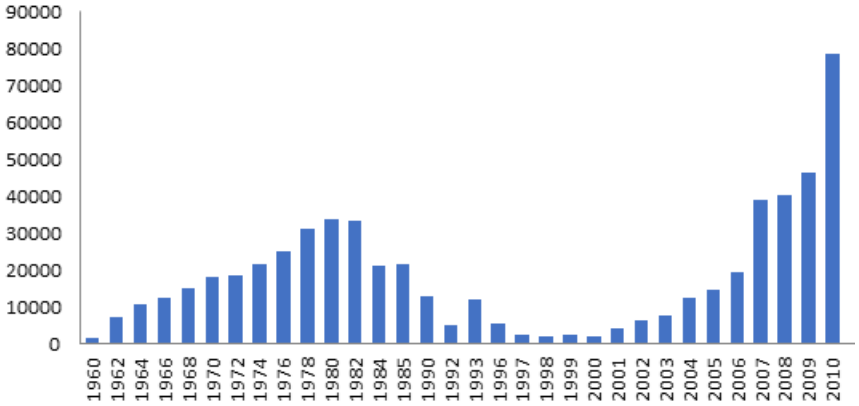
Desde 2014 o Sindicato Nacional das Indústrias de Construção Naval-SINAVAL começou a apontar, em seus relatórios, problemas que o setor estaria enfrentando. É bastante sintomático que o relatório desse ano tivesse um tom de defesa da importância estratégica da indústria, e um relato detalhado de seu crescimento e do volume, dispersão pelo país e diversidade de sua produção, além do aumento da empregabilidade, desde 2004.

Segundo o IPEA (Instituto de Pesquisas Aplicadas), a indústria naval teria crescido, a partir de 2004, 19,5% ao ano. Nesse período, o SINAVAL apresentou um quadro em que o Brasil estaria entre os 10 maiores construtores de navios e plataformas do mundo, na sexta posição.

O Sindicato dos empresários reconhecia os desafios de melhorar a produtividade da indústria e de aumentar a participação do "conteúdo local" de materiais, peças e equipamentos, que atendia as necessidades no que se referia a alguns elementos, mas ainda era dependente em outros.

[46] Jesus 2013, 57.

Gráfico 1
Evolução do Emprego na Indústria Naval 1960-2010



Fonte: Elaboração própria com vários dados do Sinaval de 2009, 2011; Pessanha 2013, 75 e Pereira 2012, 61.

O relatório se referia claramente à importância de uma política protecionista para a indústria e mostrava como diversos países tem mecanismos de apoio ao setor. Concluía indicando que as políticas de apoio, no caso do Brasil, deviam ser ampliadas.

Mas em 2015, o SINAVAL já falava abertamente na crise do setor, começando por destacar a queda brutal do emprego nos estaleiros.

Por outro lado, a Petrobrás anunciava um corte de investimentos e o afretamento de novas plataformas de produção de petróleo em licitação internacional.

O quadro se deteriorou com extraordinária rapidez. A situação que era relativamente estável quando da eleição presidencial de 2014, se tornou crítica após o impedimento da presidente (re) eleita Dilma Roussef e as denúncias de corrupção envolvendo altos escalões de funcionários da Petrobrás. Sob suspeita, a empresa se retraiu. A crise atingiu os segmentos de construção de navios e plataformas. As encomendas foram redimensionadas, algumas canceladas. O PROMEF, o plano que dinamizara o setor, entrou numa era de incertezas.

No Rio de Janeiro, o estaleiro Eisa-PetroUm (Niterói) paralisou as atividades. O Ilha S/A, também parou, com a demissão de três mil trabalhadores, envolvidos na construção de embarcações diversas, de carga

de minérios a apoio marítimo. O estaleiro BrasFELS, de Angra dos Reis, informando a paralização de construção de sondas, demitiu mais de dois mil trabalhadores.

Passados quatro anos do início da crise, o SINAVAL registra a perda de mais de 50 mil empregos e a existência de cerca de 70% de capacidade instalada ociosa no setor de indústria naval. Hoje alguns poucos estaleiros funcionam concluindo encomendas ou fazendo reparos. Outros transformaram-se em grandes depósitos de contêineres.

Embora estratégico, o setor foi inteiramente esquecido pelos recentes planos de governos de inspiração neoliberal e sem qualquer compromisso com a autonomia e independência do Brasil frente aos avanços da globalização capitalista.

Quando terminávamos este texto, em agosto de 2019, o jornal Valor Econômico publicou, na primeira página, a notícia da suspensão das atividades "por tempo indeterminado, por falta de encomendas de navios", do Estaleiro Atlântico Sul, no estado nordestino de Pernambuco. Fruto maior da expansão e dispersão geográfica pela costa brasileira da indústria naval nos governos de Lula da Silva, o estaleiro tentava renegociar uma dívida de R$ 1 bilhão (cerca de 250 milhões de dólares), com o BNDES.

2. Estaleiro Caneco, depois Rio Nave: uma trajetória representativa

2.1. O Estaleiro Caneco, breve histórico

O estaleiro Caneco foi um dos estaleiros de maior destaque desde o início da indústria de construção naval no Brasil. Vicente dos Santos Caneco, seu primeiro proprietário, começou com um pequeno estaleiro de reparos no bairro da Saúde, no Rio de Janeiro. No final do século XIX, a região tornou-se um *cluster* com 3.000 trabalhadores. Em 1909 o estaleiro Caneco se expandiu e passou à praia do Retiro Saudoso, no bairro do Caju, também no Rio. Tinha capacidade para construir navios de até 2.500 toneladas, numa área com cerca de 12.000 m2 e contando com uma ponte rolante com capacidade para levantar até 5.000 toneladas (Goularti Filho 2010). Neste momento, seu principal cliente era o Ministério da Guerra do Brasil.

No entanto, o Brasil ainda não tinha uma indústria pesada e tendia a explorar sua reserva florestal, em ampla defasagem técnica em relação à produção internacional de navios baseada no uso de ferro e aço (Pessanha 2012).

Tabela 2
Empregos em diversas regiões do País Número de empregos nos estaleiros associados (sem o segmento da Náutica)

UF	2004	2005	2006	2007[1]	2008
RJ	10.636	12.385	17.052	24.003	20.403
ES	---	---	---	---	---
SP	661	781	795	1.578	1.065
SC	1.046	766	1.208	2.207	2.395
RS	---	---	---	---	---
PA	175	190	225	225	341
AM	---	---	---	---	2.500
CE	133	320	320	632	960
SE	---	---	---	---	---
BA	---	---	---	---	---
PE	---	---	---	480	5.613
Total	12.651	14.442	19.600	29.125	33.277

UF	2009	2010	2011	2012	2013	2014[2]
RJ	23.654	25.987	25.020	29.967	30.506	35.458
ES	---	---	---	---	410	508
SP	1.414	781	721	1.604	1.782	1.838
SC	2.518	1.958	2.397	3.039	4.247	5.172
RS	820	5.500	5.500	6.174	19.954	9.454
PA	420	411	371	316	580	810
AM	2.637	9.244	11.987	13.372	11.902	12.110
CE	1.500	1.300	903	202	702	703
SE	---	350	345	38	38	58
BA	523	---	2.125	1.628	92	100
PE	7.014	10.581	9.798	5.696	7.923	15.680
Total	40.500	56.112	59.167	62.036	78.136	81.891

Fonte: SINAVAL.
(1) 2007 até agosto; (2) 2014 até julho.

Com o impulso importante à siderurgia no pós-1930 e à indústria naval em particular no final de 1950, como vimos, o Estado passou a investir mais fortemente no setor e o estaleiro Caneco foi um dos beneficiados por esse apoio, tendo sua planta ampliada para 147 mil m2. Aprovado pelo GEICON, habilitou-se a construir embarcações com mais de cinco mil toneladas de porte bruto (TPB). A primeira encomenda, de uma embarcação de 3 040 TPB, ocorreu em 1960, e depois de 1962 o estaleiro não só alcançou o quarto lugar no ranking de produção da indústria naval (entrega de embarcações acima de 1000 TPB, como seu proprietário Artur João Donato tornou-se presidente do Sindicato Nacional da Indústria da Construção Naval (SINAVAL).

Desde 1961, no entanto, a expansão começara a apresentar problemas, e o nível de produção do estaleiro começou a declinar. Fatores de diversas ordens teriam causado esse declínio relativo. Problemas de administração dos portos, a ação desarticulada dos armadores, o alto custo de produção devido ao esforço concomitante para expandir os negócios, tudo isso combinado com o processo inflacionário em curso. Os empresários também reclamavam dos altos custos salariais vigentes, uma vez que os salários no setor ficavam acima da média nacional na indústria, certa-

Quadro 1
Número de unidades em construção nos 20 principais países

1 China	584	11 Turquia	109
2 Japão	378	12 Malásia	98
3 Estados Unidos	350	13 Coreia do Sul	96
4 Indonésia	203	14 Itália	94
5 Holanda	197	15 Cingapura	89
6 Brasil	**169**	16 Índia	75
7 Noruega	159	17 França	74
8 Reino Unido	131	18 Canadá	58
9 Alemanha	125	19 Finlândia	31
10 Vietnam	111	20 Dinamarca	30
Total			3.161

Fonte: Clarksons SIN/SINAVAL **(**Obs: não foram consideradas embarcações abaixo de 1000 toneladas de capacidade de carga, nem de transporte fluvial.)

Quadro 2
Tecnologia e Inovação -1º semestre de 2014
Principais fornecedores

Materiais e equipamentos	Fornecedor	Unidade local
Aço naval / chapa grossa	Usiminas-Cosipa	Sim
Pintura e revestimentos	Akzo Nobel, Jotun, WEG	Sim
Sistemas de tubulação	V&M Tubes, Tenaris, Tuper Tubes, Apolo	Sim
Cabos, redes e painéis	Prysmian e Nexans, WEG, ABB	Sim
Geradores e motores auxiliares	WEG, Caterpillar, GE, Voith, Scania	Sim
Bombeamento	Sulzer	Sim
Automação	ABB	Sim
HVAC – Refrigeração e aquecimento	Heinen & Hopman	Não
Elastômeros	Lanxess	Sim
Motor principal	MAN, Daihatsu, Kawasaki, Mitsubishi, Wärtsillä, MTU, MAN, ABB	Não
Comando, controle, direção e navegação	Kongsberg, Northrop Grumann, ABB	Não
Comunicação marítima, por rádio e satélite	Astrium / EADS, Harris CapRock	Não

Fonte: SINAVAL

mente devido à força do movimento sindical dos trabalhadores navais, em associação com a Confederação dos Marítimos. A força crescente do movimento sindical brasileiro foi, sem dúvida, um dos fatores proeminentes do apoio do empresariado ao golpe militar de 1964.

Depois do golpe, entretanto, e das profundas mudanças que prejudicaram e reprimiram especialmente os trabalhadores e seus sindicatos, a indústria naval brasileira enfrentou ainda uma situação crítica. A falta de planejamento do setor e a baixa demanda do mercado, refletiam um quadro de crescente privatização da produção e de ajustes do papel do Estado como indutor da indústria.

Tabela 3
Empregos nos estaleiros 2015 (até dia 15/12)

	Jan	Fev	Mar	Abr	Mai	Jun	Jul	Ago	Dez
Sudeste	42.474	43.448	40.160	38.671	38.086	37.334	36.545	32.587	26.566
Sul	15.172	15.447	14.051	14.122	16.108	16.083	15.985	15.866	15.258
Norte	9.585	9.195	11.188	9.810	9.497	8.655	8.482	8.927	8.678
Nordeste	7.627	7.504	6.677	7.322	7.390	7.155	6.683	6.712	6.546
Total	74.858	75.594	72.076	69.925	71.081	69.227	67.695	64.092	57.048

Fonte: SINAVAL

Sinais de uma nova orientação só surgiriam a partir do final dos anos 1960, com o Plano de Emergência para a Construção Naval, que tentou enfrentar os problemas com o estabelecimento de novas regras de reciprocidade no transporte marítimo entre o Brasil e outros países -assegurando 40% de participação de navios de bandeira nacional em fretes do comércio exterior- e com o estímulo aos armadores, garantindo-lhes rotas de longo curso, anteriormente sob o controle exclusivo da empresa estatal Lloyd Brasileiro. As novas encomendas de navios, para a navegação de longo alcance, injetaram outro dinamismo ao setor. As taxas de utilização da capacidade das empresas subiram para 60% de 1967 a 1970, e a produção em toneladas de porte bruto atingiu 344 000 TPB. Em 1969, a CMM tornou-se a SUNAMAM (Superintendência Nacional da Marinha Mercante).

O fim do Programa de Emergência, em 1970, trouxe uma nova crise de encomendas, e um grupo de trabalho interministerial foi criado, para analisar o problema e propor medidas para sua solução. O primeiro Plano de Construção Naval (I PCN, 1970) teve o objetivo de aumentar a mecanização e automação da preparação do aço, o uso de solda, macacos e gruas hidráulicas e centralização de sistemas. O plano previa encomendas de 1,8 milhões de tpb, com valores financeiros envolvidos de USD 1 bilhão, facilitando ainda mais a importação de equipamentos.

Em 1974, sob o governo de Ernesto Geisel, foi lançado o II PCN. Este plano compreendeu um volume de encomendas (5,3 milhões de TPB) e despesas planejadas (USD 3 bilhões), que correspondiam ao triplo de toneladas e recursos financeiros do primeiro PCN. Em 1979, o

setor empregou diretamente mais de 39 mil trabalhadores, e no primeiro semestre de 1980 o Brasil teria alcançado o segundo maior volume de encomendas em todo o mundo, atrás apenas do Japão (Motta Veiga, 1984). Nesta época os estaleiros Ishibrás, Verolme, Caneco e Mauá se tornaram líderes da indústria de construção naval até a crise em 1980-1990. Em 1980, Artur Caneco elegeu-se presidente da Federação das Indústrias do Estado do Rio de Janeiro (FIRJAN), atestando a importância do setor naval.

2.2 A crise do setor naval e o estaleiro Caneco

Desde o final da década de 1980, entretanto, o efeitos da depressão decorrente das chamadas "crises do petróleo" vinham atingindo fortemente o Brasil, levando o governo a reduzir a intervenção na economia. A SUNAMAM mergulhou em uma crise profunda e uma investigação descobriu ainda casos de suposta corrupção em suas iniciativas, ligados à concessão de créditos aos estaleiros sem controle financeiro e com óbvios prejuízos para o Estado. Sob forte pressão econômica e política, os estaleiros intensificaram a demissão da grande maioria dos trabalhadores na virada dos anos 1980 para 1990. O segmento, que empregava cerca de 30 mil trabalhadores no final da década de 1970, no ano de 1998 empregava menos de 2 mil trabalhadores (Pereira 2014, 84).

O Caneco foi um dos últimos estaleiros a sofrer os efeitos da crise. Em 1985 tinha capacidade de construir navios de até 100.000 TPB e empregava cerca 10.000 de trabalhadores (incluindo os trabalhadores subcontratados). Porém, como os demais estaleiros, não conseguiria sobreviver nessas condições por muito tempo.

A crise no Caneco se iniciou com um processo de atrasos de salários e desrespeito à legislação trabalhista na segunda metade dos anos 1980. Os trabalhadores passaram a realizar manifestações frequentes pelo cumprimento dos direitos e contra os despedimentos sem o pagamento das verbas rescisórias. Mas a diminuição das obras no setor naval fez o estaleiro reduzir drasticamente o contingente de operários navais.

Segundo Pedro Carlos Batista[47], soldador no Estaleiro Caneco no

[47] Pedro Batista tinha 60 anos e trabalhava no setor naval há 30. Atuou primeiro por 10 anos no Ishibrás e em seguida 13 anos no Caneco, até a falência. Foi recontratado pelo Estaleiro Rio Nave e no momento da entrevista ocupava o cargo

período da falência, os trabalhadores recebiam frequentemente o salário com atraso e vinham sendo obrigados a entrar em férias coletivas. Também eram realizadas demissões sem o pagamento das verbas rescisórias. Em uma das manifestações realizadas pelos trabalhadores, o então presidente do Sindimetal, Luiz Chaves, chegou a ser preso pela polícia. Em 1997 o Estaleiro literalmente fechou as portas.

Apesar das críticas à sua atuação, o Sindicato e alguns trabalhadores firmaram um acordo com a empresa e com cerca de 15 funcionários – entre os quais estavam também membros da diretoria da empresa. Estes funcionários continuaram trabalhando no setor administrativo, buscando obras de reparo e tentando garantir o pagamento das rescisões dos contratos de trabalho. Todos trabalhavam, segundo as entrevistas que realizamos, sem receber salário da empresa. Alguns eram pagos pelo Sindicato, outros já estavam aposentados e o grupo de diretores da empresa, que tinha mais poder neste arranjo feito pela manutenção do estaleiro, possuía outras fontes de renda.

Este pequeno grupo de operários navais e administradores conseguiu promover pequenas obras de reparo e desmonte de navios. Alguns dos demitidos, como já destacado, eram chamados para desempenhar serviços, mas quando a obra acabava, eram pagos e voltavam para casa, sem nenhum direito trabalhista. Aguardavam uma nova obra ou atuavam em outras áreas.

Essa situação foi se arrastando durante alguns anos, mas o estaleiro Caneco praticamente paralisou suas atividades no final da década de 1990, embora a decretação da falência só tenha ocorrido em 2006.

2.3 O estaleiro Rio Nave e a recuperação da indústria naval

Em 2000, o estaleiro Rio Nave, começou a operar em parte da área total do Caneco, vindo a ocupar uma área de 94.766 m2, com 43.052 m² de área coberta. Empregou parte dos antigos trabalhadores do Caneco, mas não assumiu as reclamações trabalhistas do passado e os salários atrasados.

O cenário nacional era de retomada do setor naval, através dos estímulos do governo federal e da Petrobras. O Rio Nave foi beneficiado diretamente por subsídios do FMM, e pelos planos criados pelo governo

de gerente de setor.

de Luiz Inácio Lula da Silva, o PROMINP e o PROMEF. A Petrobras tornou-se a principal cliente do estaleiro. O emprego no segmento vinha crescendo de forma significativa.[48]

No ano de 2007, a Rio Nave passou para o comando do empresário Mauro Campos, ex-deputado federal que foi o primeiro presidente da Transpetro, subsidiária da Petrobrás.

Em 2011 houve uma tentativa de mudança de cenário. O Estaleiro Rio Nave iniciou um consórcio chamado "Guanabara Unida" (uma menção ao fato dos estaleiros se situarem na Baía de Guanabara) em parceria com a gigante coreana STX, que já tinha se associado ao estaleiro Promar de Niterói, também às margens dessa Baía. A STX tinha encomendas, mas não espaço. Já a Rio Nave tinha o espaço "herdado" do Estaleiro Caneco. Esta associação fez o estaleiro crescer. No final de 2011 tinha 1.200 trabalhadores e parou de atrasar salários, embora devesse impostos e os problemas com direitos trabalhistas persistissem.

Mas os problemas da indústria naval se avolumaram quando, durante os dois governos da presidente Dilma Roussef (2011-2016) a crise que abalou a Petrobrás sob suspeita de corrupção, afetou diretamente as encomendas de embarcações e o funcionamento e sustentação dos estaleiros. Nem o prestígio de Campos no governo e no mercado fizeram o Estaleiro Rio Nave garantir grandes encomendas. O estaleiro passou a acumular férias dos trabalhadores não pagas, assim como as taxas de horas extras, o Fundo de Garantia de Tempo de Serviço-FGTS, etc., e frequentemente atrasava os salários de todos os funcionários.

Na passagem dos anos 2014-2015, o estaleiro Rio Nave foi fechado. O encerramento das atividades se deu paulatinamente, seguindo-se a constantes atrasos salariais, ausência de depósito do Fundo de Garantia por Tempo de Serviço (FGTS) e desrespeito à convenção coletiva dos operários navais de um universo de mais de 300 trabalhadores, que seguem até o presente tendo seus direitos desrespeitados. Em dezembro de 2014 o Estaleiro chegou a ir a leilão, mas apenas a proposta do seu então diretor, o ex-ministro e ex-deputado Mauro Campos, foi apresentada. Recentemente a área principal da planta do Estaleiro veio a ser arrendada pelo grupo italiano Vard Pomar, já presente no Brasil com atuação no Estado de Pernambuco.

O Sindicato, desde as primeiras ações de desrespeito à legisla-

[48] Com esse ritmo do crescimento, em 2010 a indústria naval já empregava cerca de 78 mil trabalhadores. Ver Pereira 2014, 84 .

ção trabalhista e à convenção coletiva, ainda em 2014, busca a intermediação da Justiça do Trabalho para o pagamento das verbas rescisórias, salários em atraso e outros, bem como a interferência do Estado na busca de uma solução que inclua não só os trabalhadores do estaleiro Rio Nave, mas também de outros operários navais em situação semelhante.[49] A história se repete: as intensas e frequentes estratégias de ação coletiva por parte dos sindicatos foram, em primeiro lugar, para recuperar direitos perdidos com a falência do Estaleiro Caneco, quando demandaram e foram beneficiados pela mediação da Justiça do Trabalho. Hoje utilizam o mesmo repertório de ação coletiva, no sentido dado por Charles Tilly, com estaleiro Rio Nave. O cenário ainda é a região portuária do Rio de Janeiro. Os trabalhadores, se não são realmente os mesmos por questões de tempo de vida, são filhos e netos daqueles operários de um dos estaleiros de maior destaque da indústria de construção naval no Brasil.

Considerações finais

O caso que se passa na planta do antigo Estaleiro Caneco, que se tornou Rio Nave nos anos 1990 e agora veio a ser recentemente arrendado pelo grupo italiano Vard Pomar, é um caso ilustrativo do que vem acontecendo no país desde o primeiro impulso da indústria naval brasileira.[50] O Estado é ator fundamental para a sua sustentação. Também influente na mediação entre trabalhadores e empregadores, especialmente através da Justiça do Trabalho e do Ministério Público do Trabalho.

O papel do Estado na promoção da economia, como lembrou Evans (2004), é central nos países em desenvolvimento, seja atuando diretamente na produção, formulando e implementando políticas econômicas gerais e setoriais, ou sendo o principal cliente do sistema. Ele também

[49] Para mais informações sobre a situação atual do estaleiro Rio Nave e a indústria naval no Brasil ver o site do Sindicato dos Metalúrgicos do Rio de Janeiro-Sindimetal e o site do Sindicato Nacional da Indústria de Construção e Reparação Naval e Offshore www.metalurgicos.org.br e www.sinaval.org.br Acesso em 19 de agosto de 2019.

[50] Casos bastante semelhantes ocorreram também nas plantas dos estaleiros Ishibrás, Eisa, Mauá e Verolme. Sobre esses casos ver também outras pesquisas realizadas pelas pesquisadoras do projeto In the same boat no Brasil: Jesus 2013, Pereira 2014, Pessanha 2012.

regula e controla as forças do mercado e reaparece sempre no debate econômico e das ciências sociais diante das crises cíclicas do capitalismo e seus efeitos. Entretanto, por mais que consideremos a dependência do setor produtivo em geral ao Estado especialmente nos cenários de crise, defendemos que na indústria naval tal dependência se dá de forma mais particular por pelo menos dois motivos principais:

1) Primeiro, a atividade de construção e reparação naval (mas principalmente a construção) está submetida a riscos de perda do capital investido, devido às oscilações do mercado e às conjunturas geopolíticas que incidem sobre a divisão internacional da produção capitalista. Pelo fato do setor naval promover a construção de uma mercadoria complexa, um bem de capital por encomenda, de altíssimo custo e produção demorada, necessita de investimentos prévios e a longo prazo, o que só uma política industrial setorialmente orientada pelo Estado poderia garantir.

2) Segundo, o Estado é também parte interessada na produção de navios, meio de transporte importantíssimo para a balança comercial, para a autonomia política, militar e econômica dos países e para o transporte de mercadorias, especialmente no atual estágio de dinâmica produtiva capitalista, pautada no sistema just in time, que minimiza o estoque e coloca a produção em condição de permanente trânsito.

Ao longo dos anos, os trabalhadores dos estaleiros Caneco/Rio Nave, ao lado dos operários navais/metalúrgicos, construíram uma trajetória marcada pela tensão entre a tradição e inovação, confronto e conciliação, em uma das empresas mais antigas de construção naval e de reparação no Brasil. A observação de seu caso, no conjunto da história naval no país, é reveladora das contradições e idas e vindas de um processo que não pode nem deve ser pensado fora do contexto das características nacionais, mas também da história da indústria naval em perspectiva global.

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La construcción naval en España, 1950-2019: una introducción general y notas sobre los sistemas constructivos en NAVANTIA/Ferrol

José Gómez Alén[1]
Fundación de Investigaciones Marxistas, Madrid

Resumen

El texto es una breve introducción al estudio de la construcción naval en España. Estructurado en dos bloques, dedica una primera parte a mostrar los rasgos generales que caracterizaron su evolución desde los años cincuenta hasta nuestros días, destacando el papel determinante del Estado en el desarrollo de este sector industrial por la importancia estratégica que tiene en las economías nacionales, tanto para cubrir las necesidades internas de producción como para la exportación de todo tipo de buques. El trabajo centra su atención en los factores que permitieron la reconstrucción del aparato productivo después de la Guerra Civil y la importancia del acuerdo de cooperación firmado con Estados Unidos que facilitó la apertura económica al exterior y la entrada de materias primas y capitales. Factores éstos que posibilitaron el desarrollo de la construcción naval española hasta situarla entre los primeros países productores del mundo. La crisis de los años setenta obligó a una larga etapa de reestructuración del sector que terminaría prolongándose hasta los años noventa por los problemas derivados de la integración en la Comunidad Económica Europea. Esta parte finaliza con la evolución productiva de los astilleros españoles y sus dificultades para competir en los mercados internacionales durante las dos primeras décadas del siglo XXI. En la segunda parte se introducen algunos aspectos relacionados con la evolución de los sistemas constructivos navales desde la experiencia de un astillero que durante todo el periodo estudiado perteneció al Estado, la Empresa Nacional Bazán en Ferrol, hoy NAVANTIA-Ferrol.

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[1] josealen@telefonica.net
Orcid: https://orcid.org/0000-0002-5461-8469

Palabras clave

Construcción naval; España/Ferrol; sistemas constructivos; astillero Navantia.

Shipbuilding in Spain, 1950 – 2019: a general introduction and some notes on the construction systems in NAVANTIA/Ferrol

Abstract

This text is a brief introduction to the study of shipbuilding in Spain. Structured in two blocks, the first one shows the general features of its evolution from the 1950s to the present day and highlights the key role of the State in the development of this industrial sector because of its strategic importance in national economies, both to cover the internal production needs and the export of all types of ships. The work focuses on the factors that allowed the reconstruction of the productive apparatus after the Civil War and the importance of the cooperation agreement signed with the United States that facilitated the economic opening and the entry of raw materials and capital. These factors that enabled the development of Spanish shipbuilding to place it among the first producing countries in the world. The crisis of the 1970s forced a long restructuring of the sector that would end up in the 1990s due to the problems of integration into the European Economic Community. This part ends with the productive evolution of Spanish shipyards and their difficulties in competing in international markets during the first two decades of the 21st century. In the second part some aspects related to the evolution of naval construction systems are examined through the experience of the Bazán National Company in Ferrol, today called NAVANTIA/ Ferrol, a shipyard owned by the State during the whole period studied.

Key words

Shipbuilding; Spain/Ferrol; construction systems; Navantia shipyard.

1.-De las dificultades económicas de la autarquía al crecimiento desarrollista: 1950-1973

1.1.- El agotamiento del modelo autárquico y los cimientos de la liberalización económica

A mediados del siglo XX, la construcción naval, al igual que ocurría con el resto de los sectores industriales, sufría aun los condicionamientos que lastraron la economía española durante la década posterior a la Guerra Civil y sus dificultades estructurales se mantuvieron, en gran parte, durante el decenio de 1950. En un contexto de fuerte intervencionismo económico y de extrema rigidez ordenancista del estado franquista, el aparato productivo, devastado por la guerra, no podía superar la carencia de materias primas y energía, ni la incapacidad financiera pública o privada. La dictadura sufría además las consecuencias del aislamiento político y económico determinado, en un primer momento, por las potencias vencedoras de los fascismos y posteriormente por la decisión del dictador Francisco Franco temeroso de cualquier influencia del exterior.

En la década de 1950 si bien se mantuvieron los rasgos de la política autárquica, también se dieron los primeros pasos de una nueva fase sobre la que se cimentaría el posterior ciclo de desarrollo. El moderado crecimiento de esta "década bisagra" llegaría de la mano de una reorientación económica entre 1951 y 1958 con los primeros intentos de liberalización y apertura comercial al exterior[2]. Con el cambio de Gobierno de 1951 el Ministerio de Industria daba vía libre a las primeras leyes para superar los problemas del sector naval. La Ley de Protección a la Construcción Naval de ese año, aunque de efectos prácticos escasos, abrió la puerta a la posterior Ley de Protección de la Marina Mercante de 1957 que planteaba acabar con las deficiencias financieras y crediticias de la construcción naval poniendo en marcha una política proteccionista con el objetivo de incrementar la producción hasta un 1 millón de TRB para el decenio 1956-1965. La Ley incluía un sistema de créditos a las navieras para la adqui-

[2] José Luis García Delgado, "La industrialización y el desarrollo económico de España durante el franquismo", en *La economía española en el siglo XX. Una perspectiva histórica*, ed. por Jordi Nadal, Albert Carreras y Carles Sudrià (Barcelona: Ariel, 1994), 164-189.

sición y construcción de buques y un sistema de primas para los equipos propulsores además de otras subvenciones y desgravaciones fiscales[3].

Otro factor que contribuyó decisivamente a sentar las bases del posterior desarrollo del sector naval fue la apertura económica al exterior. En un contexto internacional de agudización de la Guerra Fría, las necesidades geopolíticas de los EEUU y el interés por establecer bases militares en la Península Ibérica encontraron un buen aliado en el anticomunismo del general Franco, lo que facilitó la integración de España en las instituciones supranacionales y su apertura a los mercados internacionales. La aprobación de los primeros créditos por el Congreso norteamericano en 1951, si bien no tuvo efectos prácticos, si abrió la puerta a los acuerdos de septiembre de 1953 que permitieron la entrada de ayuda financiera, tecnología, maquinaria, materias primas y petróleo[4]. Al mismo tiempo el crecimiento económico europeo, los movimientos de unidad comercial que fraguaron en el Tratado de Roma y la creación del Mercado Común Europeo, beneficiarían igualmente los tímidos movimientos de integración de España en el comercio internacional.

Los avances en otros sectores industriales también contribuyeron al crecimiento del sector naval. En el segundo lustro de los años cincuenta, entraron en funcionamiento las primeras centrales térmicas de La Empresa Nacional Calvo Sotelo y ENDESA que incrementaron la capacidad eléctrica instalada. Las mejoras en el abastecimiento de cobre y aluminio para la conducción y los nuevos transformadores dieron estabilidad al fluido eléctrico y pusieron fin a las restricciones de los años anteriores favoreciendo la continuidad laboral en los astilleros y la generalización de la soldadura eléctrica. De igual forma, la creación de ENSIDESA en el norte de España incrementó la producción siderúrgica y facilitó el aprovisionamiento de acero para los cascos[5].

[3] Los efectos de la Ley de Protección de la Marina Mercante de 1956 en Antonio Sánchez Aguilar*, La crisis de la industria naval ante el desarrollo económico* (Sevilla: Universidad de Sevilla, 1988), 14-17 y Ramón Tamames, *Estructura económica de España* V.I. (Madrid: Alianza, 1980), 518 y 525-526.

[4] La importancia y el volumen de ayudas procedentes de los Estados Unidos en José Antonio Biescas, "Estructura y coyunturas económicas", en *España bajo la dictadura franquista (1939-1975),* ed. por José Antonio Biescas y Manuel Tuñón de Lara (Barcelona: Labor, 1992), 47-48.

[5] El Plan de electricidad de 1954 a 1963 multiplicó por 3 la capacidad instalada entre 1950 y 1960 y los hornos de ENSIDESA comenzaron a producir en 1957,

Al mismo tiempo que mejoraba la financiación, se ponía en marcha una reestructuración empresarial del mapa de astilleros que contribuiría a la modernización y ampliación de sus instalaciones industriales para superar las deficiencias de la década anterior. El Estado franquista que había iniciado ese proceso a finales de los años cuarenta con la creación de la Empresa Nacional Bazán, lo extendió a la construcción civil en los años cincuenta creando Astilleros de Cádiz SA al adquirir el Instituto Nacional de Industria el 92% de las acciones a los anteriores propietarios y en 1954 comenzaba la actividad de Astilleros de Sevilla, después de un periodo de construcción de gradas, muelles y talleres, algo similar al caso de la factoría de Manises en Valencia, que en 1953 se dedicaba a la elaboración de maquinaria, motores diésel y bombas para los petroleros. También en el norte, en la ría de Ferrol, se amplió ASTANO (Astilleros de Noroeste) en 1956 y se constituyó en Gijón Astilleros y Construcciones SA Juliana como filial de la Compañía Euskalduna de Construcción y Reparación de Buques[6]. Además el Estado se convertía en uno de los principales clientes de los astilleros, bien desde la Empresa Nacional Elcano que encargaba buques carboneros, fruteros y petroleros o desde el Ministerio de Marina que proporcionaba trabajo a los astilleros públicos militares de Ferrol, San Fernando (Cádiz) y Cartagena (Murcia) para la renovación de su flota.

Las nuevas formas crediticias y los mecanismos de ayudas para la financiación puestas en marcha desde el Gobierno facilitaron la mejora general de las instalaciones ampliando diques, gradas y talleres, generalizando algunos avances como la soldadura eléctrica en sustitución de la de remaches y se introdujeron prácticas tayloristas de racionalización del trabajo y aprovechamiento de tiempos. Las condiciones generales permitieron una fase de moderado crecimiento industrial, el 6,6% entre 1951 y 1955 (sobre los datos del quinquenio pasado) y el 7,4% en el segundo

véase Tamames, *Estructura…,* 431-432-498-501 y Carles Sudrià, "Un factor determinante: la energía", en Jordi Nadal, Albert Carreras y Carles Sudrià, *La economía española…*, 313- 363.

[6] Juan Ignacio Cáceres Ruiz, "Política industrial. El sector de la construcción naval en España" (tesis doctoral, Universidad Complutense de Madrid, 1998), 29-31, eprints.ucm.es. También María Ignacia Vericat, "La Empresa Nacional Elcano y Astilleros de Cádiz SA, 1942-1966", en *Astilleros Españoles 1872-1998. La construcción naval en España*, ed. por Stefan Haupt y José María Ortiz Villajos (Madrid: LID, 1998), 245-284.

lustro de la década[7]. En ese contexto el ritmo de crecimiento del sector naval en los primeros años cincuenta fue más lento que el general pero mejoró sensiblemente en 1957 y 1958, si bien la política autárquica ya no daba para más y a partir de entonces se contraía de nuevo la producción alejándose de las previsiones y marcadas. Las 689.000 TRB producidas entre 1951-1960 suponían únicamente un 1,2% de la producción mundial que alcanzaba los 57 millones de TRB[8].

1.2.- La planificación indicativa y el sector naval: Del crecimiento a la crisis 1959-1975

A pesar de los avances productivos de la industria española, tímidos en el sector naval durante la década de los años cincuenta, las insuficiencias de los mecanismos de inversión sometidos a las ataduras del modelo autárquico limitaban su proyección productiva. La construcción naval mostraba síntomas de contracción, mientras la economía mundial ofrecía la proximidad de un futuro de crecimiento económico generalizado y, para aquel escenario que se oteaba en el horizonte de los años sesenta, necesitaba implementar nuevas medidas que requerían superar las reticencias de algunos núcleos del franquismo y del mismo general Franco a abandonar el modelo autárquico.

La posibilidad de acabar con los recelos del dictador llegó con el cambio de Gobierno en 1957, cuando las carteras económicas quedaron en manos de los sectores más aperturistas, los tecnócratas del Opus Dei, que abrirían el camino hacia la liberalización y la racionalización económica para dar el carpetazo final a la autarquía. La aprobación del Programa Nacional de Ordenación Económica e Inversiones sentó las bases de una reforma fiscal que daría paso al Plan de Estabilización y Liberalización Económica (1959-1961). El Plan recortaba los impulsos intervencionistas e iniciaba las transformaciones estructurales que abrieron la puerta al comercio exterior y a la entrada de capital extranjero

[7] Albert Carreras, "La producción industrial española 1842-1981: construcción de un índice anual", *Revista de Historia Económica*, nº 1, año II (1984): 127-157.
[8] Sánchez Aguilar, *La crisis…,* 4.

que cimentaría la planificación del desarrollo económico posterior[9]. La racionalización del crédito y los beneficios fiscales estimularon la inversión privada al tiempo que la Ley de Convenios Colectivos de 1958 incentivaba la productividad con las subidas salariales que se derivaban de la negociación colectiva.

Las medidas generales favorecieron al sector naval y la Ley de Renovación de la Flota Pesquera de 1961 incrementó la capacidad financiera de las empresas al facilitar el acceso al crédito oficial para la modernización de la flota. Las ayudas para el periodo 1962-1971 estaban orientadas a los buques de casco de madera con 15 años de antigüedad y de 25 para los de casco de acero. La capitalización benefició a todos los astilleros y facilitó la industrialización productiva con los nuevos buques y los congeladores que necesitaba la pesca de altura. Los efectos sobre la construcción naval no se hicieron esperar y en 1964 ya se entregaron 147 unidades que sumaban 221.747 TRB, frente a las 173.756 TRB de 1960[10].

El Plan de 1959 abrió las puertas a la planificación indicativa y en 1962, previo Informe del Banco Mundial, se pusieron en marcha los Planes de Desarrollo (1964-1967; 1968-1971 y 1972-1976) diseñados para culminar la liberalización de las relaciones económicas, alcanzar un desarrollo económico equilibrado e insertar la economía española en la economía mundial para facilitar la entrada de materias primas, petróleo, bienes de equipo, tecnología y sobre todo, el capital, que desde 1960-61 fue imprescindible para el desarrollo industrial. Además, en 1967 se iniciaron negociaciones con la Comunidad Económica Europea para fortalecer la integración internacional, aunque habría que esperar a 1970 para firmar un acuerdo preferencial.

Los Planes de Desarrollo establecían las previsiones de crecimiento económico, diseñaban los mecanismos de aplicación de las inversiones públicas y la concertación del Estado con las empresas. Sus rasgos generales favorecieron la modernización de las actividades productivas y

[9] Sobre las medidas y los efectos del Plan de 1959 véase Enrique Fuentes Quintana, "El Plan de Estabilización Económica de 1959, veinticinco años después", *Información Comercial Española*, n° 186 (1984): 612-613. También (Tamames, *Estructura…* VII 1335-1337 y 1139-1141.

[10] Xosé M. Souto González, *Vigo. Cen anos de historia urbana, 1880-1980* (Vigo: Xerais: 1990), 227 y Sánchez Aguilar, *La crisis…,* 22.

el crecimiento del sector naval hasta el comienzo del III Plan de 1972-76 cuando ya los efectos de la crisis eran una realidad que distorsionaría su conclusión[11].

En ese contexto de planificación indicativa, el Estado apoyó al sector naval con la inversión directa a través del INI, principal cliente y constructor que participaba en el accionariado de los grupos empresariales y canalizaba la firma de los conciertos para acceder al crédito oficial. Esta política proteccionista tuvo su principal instrumento en el Régimen de Acción Concertada aprobado en diciembre de 1963 aunque su firma para el sector naval se retrasaría a 1967. El programa suponía un acuerdo entre las empresas y la administración pública para alcanzar los objetivos de producción y empleo fijados y el crédito obtenido alcanzaba el 70% de la inversión en condiciones muy favorables, con largos periodos de amortización (hasta 15 o 20 años). Incluía además exenciones fiscales sobre los derechos arancelarios y la compensación de gravámenes en la importación de bienes de equipo. Se establecían descuentos sobre las licencias industriales o sobre las rentas del capital de hasta un 95% y se ampliaron los derechos de expropiación forzosa de terrenos para instalaciones navales. Las ayudas obligaban a destinar una parte de la producción a la exportación y a la racionalización de los sistemas constructivos. El concierto de 1967 aglutinó a las ocho grandes empresas del naval español, que con una producción global cercana al 90% debían destinar un mínimo del 35% a la exportación. Para cumplir los objetivos marcados fue necesario poner en marcha un proyecto de concentración empresarial y modernización de las instalaciones para equiparar los astilleros españoles al tamaño de los grandes astilleros del mundo e incrementar su capacidad productiva[12]. Aquellas medidas, implementadas en una coyuntura internacional favorable por la guerra árabe israelí y el cierre del Canal de Suez, dispararon la demanda de grandes petroleros y llevaron a los astilleros españoles a competir en ese segmento de buques, convirtiendo el periodo 1967 a 1973 en la mayor fase de crecimiento en la historia de la construcción naval española.

[11] La planificación indicativa y los planes de desarrollo en Tamames, *Estructura…,* 1167-1188 y sobre su influencia en la construcción naval Cáceres Ruiz, "Política industrial. El sector de la construcción naval en España", 65 a 110.

[12] Para el programa de Acción Concertada véase EIDA, *La industria de la construcción naval en España* (Madrid: Federación del Metal de CCOO, 1978), 56-68.

En ese marco general el Estado impulsó un proceso de reestructuración y concentración empresarial del sector naval que sería determinante para adecuar los astilleros a las necesidades productivas en un escenario de crecimiento de la economía mundial. En 1969 bajo la dirección del Instituto Nacional de Industria culminó la creación de Astilleros Españoles SA (AESA), como resultado de la fusión de la Sociedad Española de la Construcción Naval (con factorías en Sestao, Cádiz y Reinosa) con La Compañía Euskalduna (instalaciones en Olaveaga y Asua en Vizcaya); con Astilleros de Cádiz (instalaciones en Cádiz y Sevilla) y la factoría de Manises en Valencia. Otras empresas de tamaño medio como Astilleros de Santander SA; Juliana Constructora Gijón o Celaya en Vizcaya y pequeños astilleros en otras provincias quedaban ligados al grupo como filiales. AESA se convirtió así en el mayor grupo empresarial del sector con el Estado controlando un 50% de su capital. También se promovieron fusiones privadas como la formada por Astilleros y Construcciones con Construcciones Navales Yarza SA en la ría de Vigo o la asociación de ASTANO con la Unión Naval de Levante[13].

Entre los proyectos de ampliación y modernización de los astilleros, el modelo paradigmático en aquel momento fue ASTANO que, ante la demanda de superpetroleros, inicio en 1963 un proceso de renovación con la construcción de un dique para buques de 350.000 TR y una grúa pórtico de 70 metros de altura y 800 Tn. de fuerza. Además se mejoraron los sistemas de fabricación de bloques en los talleres de pre-armamento y se generalizó el uso del ordenador electrónico en talleres y en las oficinas técnicas[14]. Las medidas fiscales animaron también a la construcción de un nuevo astillero en la bahía de Cádiz que incluía la construcción de un dique de 525 metros de eslora y 100 de manga, varias grúas pórtico y demás equipamiento constructivo. Previsto para entrar en funcionamiento en 1972 y competir en el mercado de grandes buques, el proyecto sufrió diversos retrasos hasta su inauguración en 1975, cuando el sector ya estaba

[13] José María Ortiz-Villajos, "La creación de AESA. La creación del grupo de Astilleros Españoles S.A: el nacimiento de un gigante de la construcción naval", en *Astilleros Españoles 1987-1998. La construcción naval en España*, ed. por Stefan Houpt y José María Ortiz-Villajos (Madrid: LID, 1998), 319-354.

[14] Stefan Haupt y Lidia Ferrer, 1998, "Historia de las otras empresas del grupo: ASTANDER, Barreras, Celaya, ASTANO y Juliana" en Haupt y Ortiz-Villajos, *Astilleros…*, 301-314.

inmerso en la crisis de aquellos años. Al mismo tiempo el Estado fortaleció la posición de la E. N. Bazán mejorando sus astilleros para atender las necesidades de la marina de guerra y competir también en la construcción de cargueros y petroleros, tanto para el consumo nacional como para la exportación.

Otro factor que contribuyó al desarrollo del naval español fue la renovación tecnológica. Aunque muy lentamente y no en todos los astilleros, se fueron introduciendo las innovaciones técnicas que, desde mediados de los cincuenta, estaban desarrollando los astilleros japoneses. Aspectos del trabajo como las técnicas de soldadura; la introducción de la informática en los procesos de fabricación y en algunos casos la renovación de los sistemas constructivos contribuyeron a incrementar los índices de productividad; mejorar el cumplimiento de los plazos de entrega y elevar la calidad de los buques, lo que permitiría a los astilleros españoles competir con éxito en los mercados internacionales[15]. A ello también contribuiría la generalización de los métodos de gestión de la fuerza de trabajo que requerían los nuevos sistemas productivos por lo que, desde comienzos de los años sesenta, se introdujeron algunos rasgos de la organización científica del trabajo a pesar de la resistencia de los trabajadores.

En un contexto de desarrollo industrial generalizado, la construcción naval se convirtió en el segundo sector en importancia después del automovilístico, gracias al continuo crecimiento de la demanda exterior y del mercado nacional de petroleros de todos los tamaños, bulk-carriers, portacontenedores, pesqueros, congeladores, barcos de pasaje o buques militares[16]. Los datos muestran la magnitud del desarrollo de la construcción naval que en 1964, con una cartera de pedidos de 530.190 TRB, convertía a España en el 8º país productor, con el 2,89% del total mundial para alcanzar en 1971 las 5.246.322 TRB que suponían el 6,7% del mundo y el 4º puesto detrás de Japón, Suecia y Alemania. Desde ese año se mantuvo en los primeros lugares con picos altos de 7.220.960 TRB en 1974 y

[15] Ortiz-Villajos, José María, 1998, "La innovación de la construcción naval en España y en el grupo de Astilleros Españoles" en Haupt y Ortiz-Villajos, *Astilleros…*, 475-500.

[16] El incremento del producto industrial entre 1960 y 1974 fue del 11,13% mientras Europa lo hacía un 5,03% y la productividad crecía el 11,75% entre 1960 y 1970 en Albert Carreras, "La industria: atraso y modernización", en Nadal, Carreras y Sudrià, *La economía española…,* 288 ,292 y 298.

6.082.249 TRB en 1975 y en 1976, cuando ya era una realidad la contracción del mercado mundial, aun alcanzaba las 4.262.557 TRB. En cuanto al número de unidades entregadas, podemos citar como referencia indicativa el año 1970 con un total de 744.000 TRB, un 25% más que en 1969; en 1974 alcanzaban 1.476.000 TRB y en 1975 ascendía a 1.682.000. En cambio, los números de los nuevos contratos muestran más altibajos, con picos altos en 1970 y 1973 y bajos en 1972 y sobre todo 1975 y 1976[17].

La importancia económica de la industria naval en esta etapa se puede medir no solo en producción y beneficios empresariales sino también por el volumen de la mano de obra utilizada que fue creciendo durante todo el periodo hasta 1974-75 cuando los grandes astilleros rebasaban los 50.000 empleos directos[18]y, como sector de síntesis, impulsó también el desarrollo económico de los territorios donde se asentaban su instalaciones industriales. La construcción naval ejercía de motor de arrastre sobre otros sectores industriales pues recibía *inputs* de 78 sectores de actividad por la multitud de materiales y materias primas que requería la construcción de un buque, desde el hierro y el acero, al eléctrico, la maquinaria, la madera y otros, además de todo el equipamiento que necesita el funcionamiento de un barco mercante o militar[19].

2.- Una larga crisis: la reestructuración del sector naval

Los años setenta se iniciaban, pues, manteniendo los niveles de crecimiento productivo y las carteras de pedidos. La construcción de buques seguía mostrando cifras que invitaban al optimismo y en 1971 entraba en vigor una nueva Ley del Crédito Oficial para continuar con el modelo desarrollista que preveía una producción de 6 millones de TRB para el periodo 1972-75, básicamente en el segmento de superpetroleros de 300.000 y 350.000 TRB y OBOS de 230.000 TRB[20]. Sin embargo en el horizonte del naval habían aparecido ya algunos síntomas que auguraban nubarrones de crisis en España. La gran expansión estaba provocando un exceso de flota y el sector presentaba signos de una capacidad instalada sobredimensionada cuando aún no había entrado en funcionamiento

[17] EIDA, *La industria…,* 31-44 y Tamames, *Estructura…*, 524.
[18] EIDA, *La industria…,* 52-53.
[19] EIDA, *La industria…,* 78.
[20] Sánchez Aguilar, *La crisis…,* 40-43 y 72-75.

el gran astillero de Puerto Real destinado a competir en el mercado de grandes petroleros. Las alarmas también habían sonado en astilleros como ASTANO, especializado en la construcción de grandes petroleros que llevaba tiempo contratando buques con ofertas de bajos costes para ganar cuota de mercado. Con aquella estrategia firmó importantes contratos pero también generó una acumulación de pérdidas y una plantilla excesiva. Su situación financiera fue agravándose hasta acumular un déficit importante que obligó al INI a adquirir el 60% del capital en 1972 para salvarlo del cierre. Otras empresas habían cometido errores en su línea de producción, ese era el caso de Hijos de Barreras que terminaría pasando al INI en 1976. Además, en el mercado mundial a la altura de 1970 se notaba un cambio de tendencia y aunque Japón mantenía su hegemonía en el sector, Corea del Sur, India, China, Taiwán o Brasil, con costes más bajos, mostraban su capacidad productiva y competitividad alterando la estabilidad de los mercados para los astilleros europeos y también para los españoles [21].

En ese contexto, dos acontecimientos desencadenaron una crisis de grandes proporciones en la construcción naval. En 1973, los problemas en Oriente Medio provocaron la subida del precio del petróleo con una consecuencia inmediata en el precio de las materias primas y una contracción general de los mercados. Y en 1974, la apertura del Canal de Suez agravó aún más el comercio de grandes petroleros y cargueros. Sin embargo, a pesar de esos factores que amenazaban el futuro del naval, la crisis no comenzó a ser una realidad hasta 1976, porque los astilleros mantuvieron el ritmo de actividad gracias la carga de trabajo contratada durante el primer lustro de la década. Los datos de la cartera de pedidos, de buques en construcción, botaduras y entregas por años evidencian la actividad de las factorías españolas que en 1973 contrataban 361 buques y en 1974 256, de los cuales 215 estaban destinados al mercado nacional y 41 a la exportación[22].

Desde 1973, el crecimiento de la tasa de inflación mundial, las fluctuaciones del dólar y los altos tipos de interés en los mercados financieros convulsionaron la economía europea y la española y posteriormente, en 1979, una nueva subida del precio del crudo terminó por destruir la estrategia productiva del naval español y prolongar su crisis durante más

[21] José Luis Outes Ruso, *La crisis del sector naval y su repercusión en Galicia* (Vigo: Fundación Caixa Galicia, 1990), 29-30.
[22] Tamames, *Estructura…,* 524.

de tres lustros[23]. Entre 1974 y 1984 la economía española solo creció un 1,9% y el sector industrial un 1,28 y la industria naval sufrió en mayor medida el encarecimiento de las materias primas y del petróleo. En 1976 España, con un 6% del total mundial, aún ocupaba el cuarto puesto por entregas y por cartera de pedidos, pero a partir de ese año la demanda cae en picado, pasando de 194 buques en 1975 a 127 en 1976; 47 en 1977 y 40 en 1978 y en estos dos últimos años se cancelan algunos contratos para la exportación en 1977 y 1978[24]. Por otra parte la crisis del sector naval se manifestaba en un contexto de incertidumbre política por la muerte del dictador y el inicio de la transición a la democracia en 1975 y en un clima de tensión social y conflictividad laboral por el crecimiento del paro, la inflación y el descenso del poder adquisitivo de los salarios.

En ese escenario político el Gobierno retrasaría la adopción de medidas de apoyo al sector hasta el Real Decreto de 1976 que convocaba un concurso para construir buques de 80.000 TRB por un total de 1.000.000 TRB con financiación del Banco de Crédito Industrial. Posteriormente, en 1978, el Gobierno firmaba un Decreto con las centrales sindicales para mantener el trabajo en los astilleros, recolocar el excedente de mano de obra y reducir la capacidad productiva; se reorientaba la actividad de ASTANO hacia las plataformas marinas y Bazán comenzaba a abandonar la construcción civil, mientras el INI adquiría, en 1979, el 100% de los astilleros que formaban el grupo AESA, además de ASTANO, Hijos de Barreras y Astilleros de Canarias, lo que suponía controlar el 98% de la producción total del sector[25].

En esa situación el principal problema del naval español para competir no eran los costes salariales porque si bien los países asiáticos, con la excepción de Japón, tenían costes salariales menores que los españoles, los competidores europeos como el Reino Unido, Suecia, Holanda, Francia o Italia los tenían más altos. El problema estaba en el exceso de capacidad productiva, la debilidad de las tasas de productividad y las in-

[23] Luis Ángel Rojo, "La crisis de la economía española, 1973-1984", en Nadal, Carreras y Sudrià, *La economía española…*, 190-200.

[24] Tamames, *Estructura…,* 524.

[25] Véase José María Ortiz-Villajos, "Euforia, crisis y renovación en las empresas de construcción naval del INI, 1969-1998", en Haupt y Ortiz-Villajos, *Astilleros…*, 355-404.

suficiencias tecnológicas[26]. Hacia 1981 la situación no había mejorado. Los países europeos habían reducido la capacidad instalada en un 30%, la producción en un 48% y el empleo en un 40% pero España mantenía estable el empleo y su capacidad instalada aunque la producción había descendido un 40%. El sector continuaba sobredimensionado para las necesidades y la situación de la demanda lo que llevo a la aprobación del primer Decreto de Reconversión del Naval en 1982 para enfrentarse a la reducción de la capacidad productiva y de las plantillas en una primera fase al tiempo que se aprobaban medidas de apoyo financiero para evitar el cierre de astilleros. En 1984 se aprobó una nueva reconversión para el periodo 1984-1987, nada fácil de aplicar porque se dirigía sobre todo a los astilleros más perjudicados por la crisis como ASTANO y Puerto Real. La capacidad instalada se redujo entonces un 50% y las plantillas un 38% con el cierre definitivo de ASCON en Vigo y Cantábrico y Rivera en Gijón.

Esta fase de la reconversión coincidió con la entrada de España en la Comunidad Económica Europea y con la aprobación de la VI Directiva Comunitaria, que convertía en insuficientes las medidas de reconversión española. La Comunidad obligaba a reducir aún más la capacidad instalada y regulaba las ayudas estatales al naval para evitar la competencia desleal[27]. La Directiva entendía que los costes de producción aún eran excesivos para competir y que las estructuras productivas requerían nuevas reformas por lo que cambiaba la tipología de ayudas estatales y solamente permitía las destinadas a la reestructuración y al cierre de astilleros o las dedicadas a la investigación tecnológica, siempre que no interfiriesen en la libre competencia entre astilleros, y se aconsejaba su reducción progresiva hasta su extinción definitiva.

España, quedaba liberada de su aplicación y dispondría de un régimen transitorio hasta 1990 con el compromiso de aprobar un Plan de Actuación para la industria Naval para concluir la reestructuración de sus astilleros y la obligación de reducir las ayudas hasta un 20% en 1990. El Real Decreto de 1987 permitía ayudas a la construcción entre el 14 y el 23% según el valor del buque y creaba un Fondo de Reestructuración para facilitar el ajuste de plantillas. Su aplicación adelgazó sensiblemente la capacidad instalada desde el 1.000.000TRB que había en 1984 a 440.000 en 1990 gracias al cierre de empresas y a la reducción de plantillas en

[26] Outes Ruso, *La crisis…*, 76-81.

[27] Sánchez Aguilar, *La crisis…,* 125.

los astilleros del grupo AESA, Puerto Real, Barreras, Sestao y ASTANO obligado además a centrar su actividad a las producción *offshore* y a las reparaciones. A pesar de las medidas, los objetivos de la VI Directiva y del Plan de Actualización no se cumplieron totalmente: aunque solo quedaban 29 astilleros activos, la competitividad aún estaba lejos de ser una realidad porque las instalaciones todavía superaban las necesidades, los nuevos sistemas constructivos no se habían generalizado y el gobierno continuaba superando los techos máximos de ayudas, lo que originó un expediente sancionador de la Comisión Europea[28].

3.- Los astilleros españoles entre siglos

Comenzando la última década del siglo el sector naval mundial daba muestras de un incremento de la demanda dominada por Corea del Sur, Taiwán y China, con costes de producción más competitivos. La Comisión Europea entendía que los costes no reflejaban la realidad y en 1990 aprobaba una nueva Directiva y presionaba a los países de la OCDE para forzar la eliminación de las ayudas estatales al sector. La VII Directiva Comunitaria volvía a eximir a España de su aplicación pero con la obligación de bajar del 35% al 9% las ayudas a partir de 1992 y redimensionar de nuevo la capacidad instalada de sus astilleros.

Para cumplir con la Directiva el Gobierno puso en marcha una tercera reconversión del sector con el Plan de Actuación Industrial que debía mejorar la organización, el equipamiento y la formación para volver a colocar el naval español en condiciones de competir en el mercado mundial. El Plan incluía la renovación de los sistemas constructivos y se firmaron acuerdos de colaboración con Mitsubishi y Maritech Engineering Japan Ltd., para introducir la construcción integral en los astilleros de AESA[29].

[28] Sobre las Directivas Comunitarias, objetivos, criterios de competitividad y normas en José Cuerpo Pérez, "Las ayudas estatales al sector naval comunitario. Criterios para evaluar su competitividad en el mercado interior", (tesis Universidad de Vigo – Madrid: Ministerio de Defensa, 2012), 61-185, https://publicaciones.defensa.gob.es y una síntesis de los problemas de su aplicación en España en José Gómez Alén y Rubén Vega, "El Estado y la industria naval en España" en *Estado e Industria. La construcción naval en Argentina, Brasil, España y Portugal*, ed. por Cintia Russo (Quilmes: Universidad de Quilmes, 2016), 213-221.

[29] José María Ortiz-Villajos, "La creación de AESA. La creación del grupo de Astilleros Españoles S.A: el nacimiento de un gigante de la construcción naval",

El Gobierno centralizó la organización de los astilleros de AESA como una única empresa con el objetivo de mejorar la productividad y abandonar paulatinamente la dependencia de las ayudas públicas. Sin embargo, el volumen de contrataciones entre 1991 y 1993 no mejoró y en 1995 se puso en marcha una nueva fase de reconversión, el Plan Estratégico de Competitividad para el periodo 1995 a 1998, y se solicitaba una nueva moratoria a la Comunidad Europea para mantener las ayudas estatales. El Plan firmado por las centrales sindicales finalmente no sería aprobado y se cerraba otro astillero, Olaveaga. Después de 25 años de crisis, cierre de astilleros y disminución de plantillas, la construcción naval española comenzaba el nuevo siglo con una capacidad de producción instalada muy disminuida y, a pesar de los avances técnicos en el proceso constructivo, la realidad mostraba a un sector industrial que no había solventado los problemas estructurales que dificultaban la recuperación de cuotas en el mercado mundial en una fase de crecimiento que se prolongaría hasta la crisis de 2008.

En la primera década del siglo XXI, la Comunidad Europea insistía en condenar las prácticas proteccionistas de los países asiáticos y sobre todo las sospechas de *dumping* de Corea, que ofrecía costes de producción sustancialmente menores que los reales[30]. Desde el Grupo de Trabajo sobre la Construcción Naval de la OCDE, la Comunidad trataba de conseguir un acuerdo sobre condiciones de competencia, mientras en el 2002 sustituía la VII Directiva por el Marco Aplicable de Ayudas Estatales a la Construcción Naval, con vigencia hasta el 2011. El Marco permitía ayudas para I+D y para financiar el cierre o la reestructuración de astilleros, así como las orientadas a mejorar la productividad y se eliminaban las de funcionamiento, con la única excepción de las destinadas a la construcción de portacontenedores, principal segmento de los astilleros alemanes. Además se incorporaban medidas fiscales para combatir el tipo de competencia de los astilleros asiáticos y se denunciaba a Corea por su modelo de ayudas opacas que finamente no se conseguiría probar.

Las medidas implementadas no cumplieron las expectativas del naval español y los datos de la cartera de pedidos y de construcción man-

390-392 y José María Ortiz –Villajos, "La innovación de la construcción naval en España y en el grupo Astilleros Españoles", ambos en Haupt y Ortiz-Villajos, *Astilleros…*, 390-392 y 485-497.

[30] José Luis Cerezo, "El sector de construcción naval en España. Situación y perspectivas", *Economía Industrial*, nº 355-356 (2004): 186-187.

tuvieron la tendencia de la década precedente; en 2003 el Gobierno del Partido Popular puso en marcha una nueva reestructuración del sector con un entramado de transacciones societarias y ventas de astilleros entre AESA, la Sociedad Estatal de Participaciones Industriales (SEPI) y Bazán que dio como resultado la creación del Grupo IZAR. Los precios de venta e intercambios de propiedad despertaron sospechas en la Comisión Europea que ya investigaba las ayudas concedidas a ASTANO entre 1998 y el 2000 o las que se desviaron a IZAR para I+D[31]. Habiendo comprobado que entre 1999 y 2003 se habían superado los techos permitidos la Comisión sancionó a España que recurrió a los tribunales. Finalmente el Tribunal Europeo de Justicia condenó al grupo IZAR a devolver las ayudas por incumplimiento de las normas comunitarias y se forzó la disolución de IZAR y la creación de una nueva sociedad para la construcción militar, NAVANTIA que mantenía las instalaciones de Cartagena, San Fernando, Puerto Real, Cádiz y el astillero de Ferrol que incorporaba las instalaciones de ASTANO, aunque en estas se prohibía la construcción de nuevos buques hasta el 2015[32].

Los astilleros privados integrados en PYMAR (Pequeños y Medianos Astilleros, Sociedad de Reconversión S.A.), quedaron reducidos a 26 instalaciones productivas, la mayor parte en el norte con 9 en Galicia, 3 en Asturias, 4 en el País Vasco y 1 en Cantabria y el resto en el Mediterráneo, en el sur de España y en Canarias. Se privatizó Naval Sestao, la factoría de Sevilla se integraba en Astilleros de Huelva y Juliana de Gijón era absorbida por Vulcano de Vigo.

La primera década del siglo estuvo plagada de dificultades para el nuevo grupo militar. Por un lado, los astilleros del sur, con una débil carga de trabajo sostenían su actividad sobre las reparaciones y terminaron el decenio con pérdidas. Por otro lado, en el Mediterráneo, el astillero de Cartagena presentaba buenas perspectivas de trabajo con el inicio en 2005 de un ambicioso proyecto para la construcción de cuatro submarinos S-80 que renovarían ese segmento de la armada española. Sin embargo NAVANTIA Ferrol iniciaba una trayectoria de crecimiento en el 2002 con la construcción de cinco fragatas para Noruega y en el 2007 firmaría un

[31] Cuerpo Pérez, "Las ayudas estatales al sector naval comunitario. Criterios para evaluar su competitividad en el mercado interior", 228-236 y 315-323.

[32] Grupo TEPI, "50 años de construcción naval en España", *Rotación*, nº 500 (2012): 103-105.

importante contrato con la armada australiana para construir dos portaaeronaves, los LHD (Landing Helicopter Dock), siguiendo el modelo del Juan Carlos I diseñado en el astillero gallego y que aseguraba actividad hasta el tercer lustro del siglo, además de abrir la puerta a nuevos contratos con aquel país, mientras la actividad de las instalaciones de ASTANO se mantenía con las reparaciones de gaseros y plataformas y con la construcción de artefactos para la energía eólica.

En cuanto a los astilleros privados, a pesar de las dificultades y la reducción de la capacidad instalada, lograron incrementar su cartera de pedidos desde los primeros años del siglo y en el 2005 ya alcanzaban las 553.189 CGT para continuar creciendo hasta el 2008 cuando la crisis económica provocó una nueva contracción del mercado mundial y nacional y la producción retrocedía hasta las 365.595 CGT. El descenso continuaría durante el tránsito a la segunda década del siglo XXI por un nuevo problema que convulsionó el sector naval. España aplicaba desde el 2002, un modelo de financiación conocido como "*tax lease*", que concedía importantes bonificaciones fiscales a los inversores que se dedicaban a la construcción de buques. El modelo fue denunciado por Holanda ante la Comisión de Competencia de la Unión Europea y cuando siete países se sumaron a la denuncia en 2010, la Comisión Europea emitió una resolución que obligaba a devolver las ayudas recibidas por considerarlas ilegales y contrarias a las normas comunitarias. La resolución fue especialmente gravosa para los astilleros del noroeste peninsular que paralizaron su actividad, si bien los inversores recurrieron al Tribunal General, que en el 2015 desestimaba la demanda holandesa y declaraba legales las ayudas recibidas entre el 2007 y 2011. Pero la Comisión Europea recurrió ante el Tribunal de Justicia Europeo que en julio del 2018 le daba la razón y devolvía el litigio al Tribunal General para que juzgara de nuevo[33].

[33] Véase Daniel Díaz-Delgado, "Tax Lease naval", Repositorio Comillas.edu. Universidad de Comillas, 2018 y Antón Beiras Cal, "El burdel de la carretera. Reflexiones a propósito de la Comisión Europea sobre el tax lease", *Quincena fiscal*, nº 17 (2013): 97-106 y" A boas horas", *Faro de Vigo*, 28 noviembre 2015. Antón Beiras, uno de los abogados que llevaron los recursos de los inversores sobre el "tax lease", consideraba que el tema tenía un origen político y respondía a la estrategia comercial de Holanda. La realidad es que Holanda en 2010 tenía solo 7 buques en cartera y gracias a la denuncia disparó la contratación hasta las 55 unidades en 2014 mientras que España que tenía 27 buques cayó a 8 en 2014.

La realidad es que los problemas de financiación lastraron la recuperación de un sector que continuaba perdiendo astilleros y en 2015 quedaba reducido a 24 instalaciones para la construcción y 11 dedicadas a las reparaciones y empleaba a 18.000 trabajadores de plantilla y unos 40.000 en empresas auxiliares. En esta fase, los cierres y ajustes afectaron a los astilleros de Huelva y Sevilla, Unión Naval de Barcelona, Naval Levante, Cíes, Juliana y Naval Sestao. En Galicia, la comunidad con más instalaciones, cerraban más de 40 empresas de la industria auxiliar y astilleros muy importantes como Barreras y Vulcano entraban en fase concursal de la que saldrían con dificultades, mientras en el País Vasco cerraban 30 auxiliares de soldadura, calderería, tubería y mecanizado[34].

La segunda década del siglo XXI se iniciaba con incertidumbre y solo a partir de la aprobación de un nuevo "*tax lease*" a finales del 2012, el sector naval volvería a experimentar un lento incremento en su cartera de pedidos. Hasta el 2015 la contratación y la producción se reactivó en los astilleros del norte, Naval Sestao, Zamakona, Murueta y Balenziaga en el País Vasco y en las dos factorías de Armón en Asturias donde se construían mercantes y pesqueros destinados a la exportación, mientras los astilleros del noroeste peninsular tuvieron que esperar al 2016 para sentir los efectos del nuevo "*tax lease*"[35]. Durante el último lustro de la década el sector repuntó en Galicia con contratos para atuneros, remolcadores, buques *offshore*, oceanográficos y mega yates firmados por Freire Shipyards, Armón Vigo, Cardama o Hijos de Barreras que construía dos hoteles flotantes para la petrolera mexicana Pemex, en ese momento propietaria del 51 % de su capital, y se preparaba para extender su actividad al segmento de cruceros de lujo con dos encargos para la naviera norteamericana Ritz Carlton.

Hasta el 2019 los astilleros gallegos mantuvieron el ritmo de crecimiento al igual que las dos instalaciones de Armón en Asturias mientras decaía en los astilleros vascos con Naval Sestao caminando hacia su cierre definitivo. Las factorías navales del sur de Galicia continuaron mejorando su cartera de pedidos con la excepción de Vulcano que se mostraba incapaz de finalizar su único buque en cartera. Este repunte del naval co-

[34] Díaz-Delgado, "Tax Lease naval", 40.

[35] Luis Arias Hormaechea, "Análisis sectorial y posicionamiento estratégico de la industria naval hacia el 2050", (tesis doctoral, Universidad Politécnica de Madrid, 2015), 39-44, Oa.upn.es.

locó a España en el tercer puesto europeo por buques en construcción, 19 frente a los 38 de Holanda y con 37 contratos más firmados por un total de 185.634 CGT y 5,3 millones de horas de trabajo, que suponían situarse en la décima posición mundial con el 2,4% de la producción total y el 2º país europeo por número de contratos firmado en el 2017, de los que un 57% eran buques de pasaje, el 19% pesqueros, el 8% oceanográficos y remolcadores, el 3% buques *offshore* y suministro de combustible y un 2% de otros tipos. La tendencia se mantuvo en 2018 con 35 buques más en cartera y 19 buques en construcción, solo superada por Italia, Holanda y Alemania[36].

Durante gran parte de la segunda década del siglo, los astilleros públicos del grupo NAVANTIA, mantuvieron la línea productiva de años anteriores. El astillero de Cartagena atravesaba una situación muy complicada debido a los graves problemas técnicos en el diseño de los submarinos S-80. En los astilleros de la Bahía de Cádiz, Puerto Real estaba ocupado en la construcción de cuatro petroleros, lo que suponía el retorno a la construcción civil después de veinte años y el astillero de San Fernando, además de la construcción de una serie de buques de aprovisionamiento en combate, BAM, comenzaba la construcción de cinco corbetas para Arabia Saudí. Por su parte el astillero de Ferrol construyó un BAM para la armada española y finalizaba el proyecto de los mencionados LHD para Australia, a la vez que desarrollaba un programa de transferencia tecnológica para la construcción de tres destructores y para estos trabajos estableció oficinas técnicas en Sídney y Camberra y durante estos años desplazó unos 200 trabajadores e ingenieros para participar en la finalización y mantenimiento de los LHD y sus lanchas de desembarco y para el programa de los destructores. En cuanto a las antiguas instalaciones de ASTANO integradas en NAVANTIA Ferrol, cumplida la prohibición impuesta por la CE, no volvieron la construcción de nuevos buques pero mantenían la actividad de reparaciones y confirmaban su especialización en las estructuras de acero para la energía eólica marina.

El sector naval español, finalizando ya 2019, mantiene la tendencia productiva de los últimos años. Los astilleros privados tienen buenas perspectivas de construcción por los encargos ya conseguidos por los astilleros gallegos y asturianos durante el primer semestre del año, aunque

[36] Para la evolución de la contratación véase PYMAR, "Informe de actividad", 2017 y 2018 y *Faro de Vigo*, 18 junio de 2018.

la carga de trabajo escasea en el País Vasco, que se debilita con el cierre definitivo de Naval Sestao. Los datos que ofrece PYMAR confirman, en el segundo semestre, la tendencia apuntada y los astilleros de Galicia están trabajando en 30 de los 57 buques que se construyen en España, un 53% del total: la cartera actual muestra datos muy positivos para Freire Shipyards que firmó 2 nuevos buques, un pesquero y un mega yate de lujo de 111 metros de eslora para Seacon Italy y mantiene una cartera de 6 buques para este año; Hijos de Barreras trabaja con cuatro cruceros de lujo, dos para Ritz Carlton y dos para la noruega Havila Krystuten; Cardama tres; Metalships un crucero a vela y una reconversión en marcha; Armón tiene siete y el líder es NODOSA en la ría de Pontevedra con nueve buques[37].

Sin embargo a pesar de que los contratos aseguran carga de trabajo hasta final del 2020, las organizaciones sindicales no ven tan claro que se pueda mantener el ritmo de estos años de recuperación porque en su horizonte inmediato perciben algunos síntomas preocupantes para la estabilidad futura de algunos astilleros. Por un lado están los rumores de venta de Metalships y Armada o la decisión de Pemex de vender su 51% de acciones de Barreras y porque este astillero tiene que solventar el retraso en la construcción que acumula el crucero para Ritz y aunque se anuncia que las obras van a reanudarse, tendrán que solucionar, entre el astillero, la naviera y Havyyard Design, el problema del sobrecoste que supone la ampliación de eslora por los errores de diseño de los cruceros. Un tema que ya tiene consecuencias en algunas auxiliares que anunciaron cierres y despidos. Por otro lado, la situación de Vulcano en fase concursal de liquidación que no parece encontrar nuevo propietario para sus instalaciones y trabajadores, lo que significaría el final de la vida de un astillero con 100 años de construcción naval[38]. Las organizaciones sindicales, ante esas preocupantes señales que amenazan el buen momento que parece atravesar la construcción naval en España, insisten en reclamar la atención de las instituciones sobre el sector. Desde Comisiones Obreras, sindicato mayoritario en los astilleros, se plantea la reactivación de la mesa del sector naval formada por la Xunta de Galicia, los empresarios y los sindicatos para tratar los problemas de los astilleros. Se reivindica más carga de trabajo con la

[37] Los datos de cartera de pedidos, nuevos contratos, construcción y entregas en *Boletín de la construcción naval*, primer trimestre de 2019 y en *Faro de Vigo*, 10 de marzo y 22 de agosto de 2019.

[38] *Faro de Vigo*, 21, 22 de agosto y 10 de septiembre de 2019.

propuesta de renovación de la envejecida flota pesquera con más de treinta años de media y se denuncia la excesiva subcontratación al mismo tiempo que reclaman la necesidad de desarrollar un programa de formación de los trabajadores para incrementar el número de trabajadores fijos de plantilla y eliminar o minimizar los problemas que genera la inestabilidad de las empresas auxiliares[39].

Similares síntomas de inquietud aparecen en el grupo público NAVANTIA, que ocupa el 80% del empleo del sector en España. Los sindicatos muestran su preocupación por la debilidad de la carga de trabajo del grupo. Los astilleros del sur, una vez finalizados los cuatro petroleros ya mencionados, solo disponen de las "*jackets*" cedidas por Fene y de las cinco corbetas en construcción para Arabia Saudí, además del trabajo de reparación de buques. El astillero de Cartagena continúa con los problemas del programa de submarinos y con el primero de ellos aún sin entregar, aunque el Ministerio de Defensa mantiene la construcción de toda la serie[40]. En NAVANTIA Ferrol, una vez botados los buques de aprovisionamiento en combate A.O.R., para Australia, solo queda el trabajo a flote que ocupa a muy poca mano de obra. La preocupación por la falta de carga de trabajo inmediata se deriva además de la decisión de Australia de adjudicar a BAE SYSTEMS el contrato al que aspiraba el astillero ferrolano para construir nueve fragatas, por lo que actualmente no tiene más buques en perspectiva que las fragatas F110, cuyo inicio está previsto para el 2022. A corto plazo solo queda el trabajo de la división de reparaciones que sí firmó importantes contratos este año. Por su parte las instalaciones de Fene mantienen un gran ritmo de producción y después de construir 29 "*jackets*" para el parque eólico Winkiger en el Báltico y 42 para el mayor parque eólico marino del mundo, el East Aglian ONE de Iberdrola, en este 2019 se firmó un nuevo contrato con Windar Renovables para construir 62 "*jackets*" para el parque eólico de Saint Brieuc en la zona marítima de la Bretaña francesa y se están construyendo cinco plataformas para un

[39] Informe y conclusiones de las reuniones de los astilleros privados de Galicia, Sindicato Comarcal de Industria de Comisiones Obreras, junio y julio de 2019. Agradezco a los representantes de los astilleros y al Secretario General de Comisiones Obreras de Galicia su generosidad para permitirme asistir a sus reuniones y recibir la documentación generada.

[40] Ministerio de Defensa*, Informe Programa submarinos S-80*, www.defensa.gob.es

parque flotante de Cobra en aguas de Escocia, lo que convierte a la antigua ASTANO, que no ha retornado a la construcción de buques, en un referente mundial de la construcción *offshore* eólica. Ante lo que consideran una preocupante situación, las organizaciones sindicales y los partidos políticos presionan al Gobierno para que el Ministerio de Defensa encargue un buque logístico que mantenga ocupado al astillero a la espera de comenzar la construcción de las cinco fragatas F110 arriba citadas y en el caso de los astilleros del sur se reclama la construcción de un nuevo petrolero para mantener la línea productiva reiniciada en los últimos años.

Por otro lado y tal como informó en el Parlamento la presidenta de NAVANTIA, los astilleros del grupo están inmersos en la creación del proyecto de astillero 4.0 que supondrá una nueva fase de desarrollo tecnológico del sistema constructivo con la incorporación de las nuevas herramientas digitales que marcarán, en este siglo, el futuro de la construcción naval. Pero, ante este proyecto, las organizaciones sindicales también muestran cierta inquietud por las noticias que proceden del Gobierno. Tanto el Ministerio de Industria como el de Fomento rechazan participar en la financiación para construir las nuevas instalaciones que requiere este astillero, lo que lleva a algunos dirigentes sindicales a sospechar que detrás de estas negativas se esconde la intención de un futura privatización del astillero[41].

4.- La evolución de los sistemas constructivos en NAVANTIA Ferrol, 1950-2019

Las actuales instalaciones de NAVANTIA en Ferrol, llevan más de dos siglos dedicadas a la construcción naval y desde entonces ha destacado entre los astilleros españoles por su capacidad para la innovación técnica y la transformación de los procesos constructivos. Durante los

[41] La presidenta de NAVANTIA, Susana Sarria Sopeña respondió a las preguntas de los grupos parlamentarios sobre el Plan Estratégico para el 2018-2022; la situación de las corbetas para Arabia Saudí; el programa de las fragatas para la armada; el trabajo en Australia o las líneas de producción del grupo NAVANTIA en Diario de sesiones del Congreso de Diputados, nº 654, XII Legislatura, Madrid, 7 de noviembre de 2018 y también *La Voz de Galicia*, 14 de agosto de 2019. Agradezco a Joaquín Sinde, ingeniero técnico de NAVANTIA Ferrol y secretario de la CGT el envío de diversa documentación relacionada con la actual situación del grupo NAVANTIA.

últimos setenta años el sector naval ha atravesado diferentes etapas de crecimiento y crisis y el astillero ha caminado tecnológicamente a la par de esas etapas logrando algunos hitos constructivos que lo sitúan, a esta altura del siglo XXI, entre los más desarrollados del mundo en la construcción militar y proyectando el modelo de astillero que marcará la forma de construir buques en este siglo.

La construcción de un barco mantiene, aún hoy, las fases constructivas tradicionales y lo que ha ido cambiando en el tiempo es la mayor o menor complejidad de sus estructuras, los materiales, los componentes del buque, las especificidades propias de su función, las técnicas de construcción y el proceso constructivo que engloba a todo lo que es un barco, que se construye para cubrir unas necesidades militares o de transporte. Según ese objetivo se definirá su diseño, las características y especificaciones que determina el cliente, su capacidad de carga, la propulsión y un sinfín de elementos que vienen condicionados por la función para la que está destinado y que hacen posible que navegue. En ese sentido su construcción se divide en partes y fases, que van del casco a los elementos que componen el armamento y los servicios que requiere su función específica y también la capacidad tecnológica del astillero. Por lo tanto, el proceso de construcción del buque se inicia en el mismo momento en que se contrata y se diseña y finaliza con la entrega al armador en el plazo fijado. Desde esa perspectiva todo el proceso debería funcionar con arreglo a las fases de construcción marcadas por las necesidades del cliente y cumplirlas dependerá de la organización de la producción y del sistema constructivo empleado que, en el caso que nos ocupa, ha evolucionado en su historia a la par que lo hacían las necesidades del transporte o las militares y los materiales de todo tipo que requería la construcción, lo que también nos permite medir el alcance de la renovación tecnológica del modelo constructivo utilizado en cada momento histórico. El objetivo de esta breve incursión en el tema, no es hacer un recorrido exhaustivo por la evolución de las formas de construcción de barcos desde los años en que el astillero comenzó su andadura, sino centrarnos solamente en el periodo que va de mediados del siglo XX hasta el presente.

4.1.- Desde la tradición a las primeras innovaciones en el sistema constructivo

A comienzos de los años cincuenta, las instalaciones de la Empresa Nacional Bazán en Ferrol cumplían las directrices de producción marcadas por los encargos del Gobierno para reconstruir la flota de guerra y en esta etapa el astillero continuaba un trabajo que se había iniciado a finales de los años cuarenta, la construcción de una serie de nueve torpederos tipo Audaz y varios destructores Oquendo que avanzaban con lentitud por los problemas de estabilidad detectados durante las pruebas de mar. La línea de construcción militar no fue mucho más allá de estos buques, su transformación posterior y algunas barcazas, porque a partir de 1953, la firma del acuerdo de cooperación con EEUU y las necesidades energéticas de España, llevaron a la Bazán a dirigir la orientación productiva hacia el segmento de petroleros y cargueros que dominarían la actividad del astillero durante la década de los sesenta, período en el que se construyeron varios cargueros y sobre todo 17 petroleros, entre ellos el mayor construido en España hasta ese momento.

El sistema constructivo utilizado en estos buques, que se mantuvo hasta finales de los años sesenta, seguía los parámetros de construcción gradual, por fases y en la grada, ya tradicionales en el astillero pero con los rasgos de renovación tecnológica heredados de la etapa de la Sociedad Española de Construcción Naval, cuando estaba dirigido por ingenieros británicos. Fue el primer astillero que introdujo el sistema de prefabricación y montaje de partes del buque ya soldadas eléctricamente. El proyecto partía del tipo de buque que encargaba el armador, en estos años el Estado, bien desde el Ministerio de Marina para la renovación de la flota, bien desde la Empresa Nacional Elcano para el transporte de petróleo. Los buques militares tenían mayor complejidad constructiva por la especificidad de su función e incorporaban todos los instrumentos que requería el diferente equipamiento militar demandado, mientras que los cargueros y los petroleros, si bien con menos dificultades técnicas, obligaban a mantener la calidad del trabajo porque la dificultad constructiva residía en conseguir la estanqueidad y la estabilidad que necesitaba el tipo de carga y los gases que acumulaba en el caso de los petroleros.

El trabajo de construcción se iniciaba en la sección técnica con la oficina de proyectos como su eje central. Formada por los ingenieros y demás técnicos con diferentes niveles profesionales y responsabilidades,

diseñaban los proyectos ordenados por la dirección según las necesidades del cliente. Una vez firmado, el proyecto pasaba a la oficina de delineación donde se preparaban los planos que salían hacia la sección de trabajos que se encargaría de organizar todas las tareas de construcción en tiempo y forma, para lo cual disponía de una amplia estructura profesional que abarcaba la totalidad de la plantilla y oficios con sus respectivas funciones y categorías.

Con los planos listos para su desarrollo comenzaba la construcción del barco con la solicitud del material necesario para iniciar el trabajo en los talleres de fundición donde preparaban el acero para el corte de la chapa, la elaboración de la quilla y el fondo, que constituían el comienzo de construcción del casco y que eran los primeros elementos que se colocaban en la grada. Desde ese momento inicial el proceso constructivo pasaba a las diferentes secciones y talleres de pre armamento y sus equipos completaban el desarrollo del trabajo de electricidad; maquinaria dotada de una sección técnica y oficina de proyectos propia y los distintos grupos de producción de forjas; mecánicos; calderería, tuberos, chapa fina y pinturas. Los responsables de los grupos en talleres son los que se encargaban de la organización del trabajo y de su ejecución siguiendo las normas establecidas por la empresa que contenía el Reglamento de Régimen Interior que definía las titulaciones, las funciones y responsabilidades de cada una de las secciones y oficinas del astillero y del conjunto de trabajadores y técnicos. En esos años también se introdujeron algunos rasgos tayloristas de control de tiempos y la calidad de la ejecución del trabajo[42].

Con este sistema el buque iba creciendo en altura y amplitud en las gradas siguiendo las fases constructivas y el ritmo de trabajo determinado por las diferentes secciones del astillero y según llegaban desde los talleres los diferentes componentes para el doble casco, en el caso de los petroleros más avanzados; la compartimentación con la fabricación y el montaje de los mamparos laterales y centrales; las cubiertas; el puente; los elementos de la popa y la proa y finalmente el pintado del barco. El astillero de Ferrol, como se ha mencionado, ya construía pequeñas partes más elaboradas y el ensamblaje de esos bloques prefabricados fue mejo-

[42] Reglamento de Régimen Interior de la Sociedad Española de Construcción Naval. Factoría de Ferrol del Caudillo (Bilbao: Editorial Elexpuru, 1940). El reglamento fue modificado en los años siguientes pero mantendría rasgos similares hasta 1963.

rando en el tiempo según lo hacía también la influencia de los sistemas que estaban experimentando en Japón pero que no se habían generalizado en los astilleros españoles. Finalizada esta fase se botaba el buque y se completaba con el montaje a flote de los motores; el armamento militar según el buque y los instrumentos que permitían su funcionamiento y se completaba la instalación de los equipos de navegación, la diversidad de tuberías, la electricidad y todos los elementos accesorios de habitabilidad, camarotes, salas de estar, comedores y demás servicios del buque. Finalizados los trabajos a flote, el barco realizaba las correspondientes pruebas de mar para comprobar el funcionamiento de la electrónica y los sistemas de navegación, el equipamiento militar y los demás elementos que permitían su entrega al armador.

A partir de 1964 la dirección del astillero fue introduciendo algunos cambios en el sistema constructivo por la mayor complejidad de los encargos y las innovaciones técnicas que obligaban a adaptar las instalaciones al tipo de buques demandados y a la organización del trabajo que requerían los plazos de construcción fijados. En esos años, las necesidades de la armada y la relación técnica con los Estados Unidos facilitaron la diversificación productiva con cargueros y petroleros de gran tamaño y la transformación de buques militares. Los procesos constructivos avanzaron en la fase de pre armamento con bloques cada vez mayores y más completos que permitían optimizar el ensamblaje de la cubierta o el puente y otras partes del buque. Los avances en el sistema constructivo obligaban también a mejorar la organización del trabajo y adecuarla a las exigencias que imponían los técnicos norteamericanos. La dirección de Bazán, con el objetivo de incrementar la productividad de cada trabajador, optó por introducir en algunos talleres y profesiones el sistema Gombert que establecía el tiempo de ejecución de cada tarea asignada que se medía en niveles de optimización y el salario quedaba ligado en parte al nivel de productividad alcanzada. Los tiempos eran controlados por los encargados de cronometrar el trabajo y su introducción originó diversas protestas de los obreros, disconformes con el valor de las primas o con el papel de los cronometradores[43].

[43] Sobre la implantación de este sistema de organización del trabajo y la conflictividad que generó véase José Gómez Alén, *As Comisións Obreiras de Galicia e a conflictividade laboral durante o franquismo*, (Vigo: Xerais, 1995), 51-57 y José Gómez Alén, "La organización del trabajo y los conflictos laborales en Galicia,

A final de los años sesenta, la confluencia de varios factores condujo a la primera innovación importante en el sistema constructivo. Por un lado, el cierre del Canal de Suez suponía nuevas necesidades en el transporte de crudo, lo que incrementaba la demanda de grandes petroleros, mientras que por otro lado, el Gobierno diseñaba un nuevo programa para adaptar la flota de guerra a los nuevos tiempos firmando un acuerdo de colaboración con los Estados Unidos por el que la factoría de Ferrol se encargaría de modernizar dos destructores y construir cinco fragatas lanza misiles, derivadas del modelo Knox. El doble reto que suponía competir en el segmento de superpetroleros y construir modernos y sofisticados navíos de guerra requería importantes cambios técnicos y la renovación del sistema constructivo. Las fragatas de la serie Baleares, de modelo y dotación de tecnología militar estadounidense, obligaron al astillero a cumplir las exigencias del acuerdo de trasferencia tecnológica y a desarrollar nuevas forma de entender el proceso productivo. Para ello el astillero modernizó y amplió entonces las instalaciones de sus tres divisiones: construcción, reparación y turbinas; preparó un nuevo taller para la fabricación de bloques; mejoró el taller de tuberos con nueva maquinaria para perfeccionar el trabajo y se construyó un nuevo dique seco de 330 metros de eslora, 51 de manga y 14 de calado, con cierre de barco puerta que era el mayor de España en aquel momento. Las especificaciones del modelo americano y los materiales requerían la introducción de nuevas técnicas de trabajo y el control constructivo de los técnicos estadounidenses y para enfrentarse al novedoso proyecto, los trabajadores también tuvieron que realizar cursos de formación. Ingenieros, técnicos y obreros especialistas eléctricos, mecánicos y electrónicos recibieron formación especializada para cada función durante la fase de diseño de las fragatas en 1968 y 1969[44]. También el control técnico del trabajo y el cumplimiento de las fases constructivas obligó a una aplicación más rígida del control de tiempos y de los niveles de productividad, lo que hizo necesario extender el sistema Gombert a todos los trabajadores del astillero.

1960-1975", en *El trabajo a través de la historia*, ed. por Santiago Castillo (Madrid: Asociación de Historia Social, 1996), 543-550. También en I y II Convenio Colectivo Interprovincial de E.N. Bazán, 1964 y 1967.

[44] 200 soldadores asistieron a un curso sobre técnicas de soldadura de tubo en Estados Unidos en José María Blanco Núñez, *La construcción naval en Ferrol. 1726-2011* (Ferrol: NAVANTIA, 2011), 135 y Manuel Ramírez Gabarrús, *La construcción naval militar española, 1730-1980* (Ferrol: E.N. Bazán), 192-193.

El proyecto de la serie de fragatas Baleares fue un hito que permitió al astillero la construcción total del buque por bloques prefabricados en talleres de donde salían con la estructura preparada en su integridad para ensamblarlos en la grada. Y, siguiendo la misma línea de trabajo se completaba el casco y la compartimentación hasta la cubierta y el puente. La quilla de la primera fragata se montó en 1968 y el proyecto finalizó en 1976 con la entrega de la última. Aquel proyecto supuso la innovación de las técnicas de trabajo, la introducción de un nuevo tipo de casco, nuevos sistemas electrónicos y armas y otros avances que mejoraban la habitabilidad y las condiciones de vida en el buque y, sobre todo, el desarrollo del sistema constructivo que transformó la industria naval del grupo e inició el camino hacia la construcción integral de las décadas siguientes. Para el astillero, su éxito determinó una línea de producción militar que abriría el camino hasta las actuales fragatas F100 y al proyecto a desarrollar en la próxima década, las nuevas F110.

4-2.- La construcción integral en el camino hacia el astillero 4.0

A pesar de la crisis y la reconversión naval, el astillero mantuvo su actividad con la carga de trabajo acumulada en años anteriores y durante la segunda mitad de los años setenta y los ochenta perfeccionó la construcción en bloques en todas las secciones de producción y aunque aumentaron su tamaño progresivamente y cada vez eran más completos, los tiempos de ensamblaje en grada y de entrega se cumplieron en todos los Petroleros, OBOS y bulk carriers construidos en esa etapa. Finalmente el astillero, forzado a abandonar la industria civil, recibió nuevos encargos para la armada española: una serie de fragatas FFG; el portaaviones Príncipe de Asturias y sobre todo el Patiño, un buque de aprovisionamiento en combate, A.O.R que, junto al portaaeronaves Chakri Naruebet para la armada de Tailandia, significaría un paso más en la consolidación del sistema de construcción integral. El sistema constructivo continuaría perfeccionándose con las fragatas F100 y el LHD (Landing Helicopter Dock) Rey Juan Carlos que con 230,82 m. de eslora y 32 de manga fue el mayor buque militar construido en España. Todos ellos fueron proyectos propios que convirtieron al astillero en especialista reconocido mundialmente en unos segmentos de buque, altamente tecnificados y que finalmente abrirían el paso a los grandes contratos firmados en la primera década del siglo XXI para la exportación, la serie de cinco fragatas para la marina noruega

que fue el mayor contrato de la industria militar española en su historia, con un millón de horas de ingeniería y 11 millones de horas de trabajo y el contrato con la Royal Australian Navy para construir dos LHD en el que colaboró la BAE SYSTEMS británica. El trabajo para la armada australiana continuó, finalizando la segunda década, con los trabajos para tres destructores y la construcción de dos buques de aprovisionamiento en combate, AOR que actualmente están en fase de finalización.

Los buques construidos durante las tres últimas décadas eran tecnológicamente muy complejos, lo que unido a las especificidades exigidas por los países armadores y la rigidez en las fechas de entregas recogidas en los contratos, obligaba a perfeccionar los sistemas constructivos con nuevos avances que permitieran cumplir con las condiciones contractuales. Todos los proyectos de estas tres últimas décadas se desarrollaron siguiendo las pautas y los métodos del sistema de construcción integral. Una forma de entender la construcción naval que suponía un paso más en la planificación y desarrollo constructivo de un buque que se iniciaba con el diseño de una estrategia constructiva que entiende el barco como un conjunto de productos intermedios. Los bloques salen de los talleres pintados y con todos los elementos incorporados, tuberías, sistemas eléctricos y se montan en la grada divididos por zonas y módulos. Todos los trabajos progresan simultáneamente y así lo hace también la estructura integra del casco. Cuando el bloque se traslada a la grada no necesita más que algún retoque para el ensamblaje con el resto de bloques que conforman las diferentes zonas del buque y solamente se necesita montar los motores y, ya con él a flote, realizar los últimos trabajos para comprobar el funcionamiento de todos los sistemas en las pruebas de mar. El diseño de esta estrategia constructiva requiere el funcionamiento coordinado de todos los departamentos del astillero desde la oficina técnica que proyecta el programa de construcción a la ingeniería, el aprovisionamiento de material o la sección de producción. A pesar de la complejidad del sistema, el grado de perfeccionamiento alcanzado en la elaboración de los bloques permite compartir entre varios astilleros la construcción de un buque como ocurrió con algunos de los mencionados.

Las nuevas formas de construcción incluyen otras innovaciones que provienen de la informática y del desarrollo de nuevos instrumentos como el diseño en 3D y programas ad hoc para facilitar el flujo de información técnica u organizativa y disponer a tiempo de todos los materiales y elementos de producción en la medida de las necesidades de cada mo-

mento[45]. Los nuevos métodos de organización del trabajo permiten optimizar al máximo la capacidad de la totalidad de la plantilla de trabajadores y la introducción de las formas organizativas de *Just in Time*, aplicadas en la construcción naval por el astillero de Ferrol, incorporan las técnicas *Lean*: organización, orden, limpieza, control y disciplina, que suponen una nueva racionalización del trabajo y un paso más en el desarrollo del sistema constructivo con la mirada puesta en el futuro[46].

NAVANTIA Ferrol, después de un siglo de profundas transformaciones y cerca ya de la tercera década del siglo XXI, se encamina hacia lo que será un nuevo salto tecnológico en la construcción naval, el astillero 4.0. El nivel de tecnificación alcanzado con la construcción integral y la necesidad de competir en el mercado mundial en segmentos tecnológicamente tan complejos como los de la marina de guerra, está llevando a su dirección a preparar el futuro del astillero con el objetivo de desarrollar un plan de eficiencia operativa que facilite la utilización de las ultimas herramientas digitales de diseño y de producción. La digitalización de todo el proceso productivo favorece el trabajo de ingeniería con la utilización de la tecnología 5G que facilita el escaneado del diseño de los bloques en 3D y mejora la precisión a niveles milimétricos, lo que reduce tiempo y minimiza errores en la construcción y montaje de los bloques. Además, las secciones de producción pueden trabajar con más garantías de calidad los nuevos materiales, resistentes a cualquier tipo de corrosión, que se usan en la fabricación de piezas y bloques. La digitalización de todo el proceso productivo también permite ofrecer asistencia técnica a distancia sin la obligatoriedad de desplazar a técnicos, ingenieros o trabajadores especializados para completar un buque o realizar trabajos de mantenimiento.

Este modelo de astillero adquiere una gran capacidad para adaptarse a cualquier tipo de embarcación y especificaciones exigidas por el

[45] Sobre la modernización del proceso constructive en esta etapa véase José Gómez Alén, "Work, workers and labour conflicts in the shipyard Bazán/NAVANTIA-Ferrol, 1950-2014", en *Shipbuilding and Ship Repair Workers around the World. Case Studies 1950-2010*, ed. por Raquel Varela, Hugh Murphy y Marcel van der Linden (Amsterdam: Amsterdam University Press, 2017), 297-301.

[46] José Antonio Cabanas, Antonio Crespo y Carlos Merino, "La construcción integrada: una herramienta eficaz en la colaboración entre astilleros" (XLIII Sesiones técnicas de ingeniería naval, Ferrol, 2004) y Jeffrey Liker y Thomas Lamb, "¿Qué son la construcción y reparación naval Lean?", *Revista de producción naval*, nº 18 (2002).

armador con rapidez y eficiencia sin necesidad de cambiar ningún rasgo del modelo constructivo. Su puesta en funcionamiento requiere disponer de una planta de grandes dimensiones para realizar todo el trabajo de construcción en seco y a cubierto, sea cual el segmento y la magnitud del buque. El sistema obliga también a diseñar un nuevo modelo de gestión, con una área de I+D+I de tecnologías digitales, formar a los trabajadores en las nuevas herramientas y disponer de una organización adecuada a las nuevas necesidades, lo que supondrá, en palabras de la Presidenta de NAVANTIA Susana Sarria el rejuvenecimiento de las plantillas, con formación suficiente para adaptarlas a las nuevas formas productivas[47].

Desde el astillero se trabaja con la mirada puesta en ese futuro paso adelante y algunos de los aspectos de digitalización tanto en el diseño como en la organización productiva ya se incorporaron en la construcción de los últimos buques. Sin embargo, las organizaciones sindicales y la izquierda política, ante las noticias que llegan desde el Gobierno, manifiestan algunas dudas sobre su futuro. Tanto el Ministerio de Fomento, que tiene responsabilidades sobre la lámina de agua y los rellenos que se necesitan, como el Ministerio de Defensa, armador natural del astillero, rechazan participar financieramente en la construcción de la nueva planta de producción y en los demás costes que supondrá el astillero 4.0[48]. Las respuestas gubernamentales y la deriva actual de la actividad en los astilleros públicos no parecen augurar buenas perspectivas e intenciones sobre el proyecto, teniendo en cuenta que actualmente ya son múltiples las tareas constructivas que están en manos de empresas auxiliares, tanto de ingeniería como de aceros, soldaduras, mecánica y otras, lo que hace temer a las organizaciones sindicales por el futuro carácter público del grupo de astilleros NAVANTIA.

[47] Intervención de la presidenta de NAVANTIA en el Congreso, en Diario de sesiones del Congreso, 7 de noviembre de 2018.

[48] *La Voz de Galicia*, 6/08/2019, recoge las respuestas sobre el tema del Ministro de Fomento en el Congreso de diputados a las preguntas de la parlamentaria de Unidas Podemos, Yolanda Díaz.

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The shipbuilding industry in Norway and the rise of the Aker Group

Hans-Jakob Ågotnes[1]
Professor of Cultural Studies at the
Department of Archeology, History,
Cultural Studies and Religion
University of Bergen

Jan Heiret[2]
Professor of History at the
Department of Archeology, History,
Cultural Studies and Religion
University of Bergen

Abstract

This article aims to discuss what factors have determined the development of the Norwegian shipbuilding and ship repair industry after 1945, and how it's place in the industrial structure has changed in the after-war epoch. In addition to market conditions and political regulations, a structural change in the way capital operates in the industry is important. We will also discuss the system of industrial relations developed in this branch.

Keywords

Norway; shipbuilding; state intervention; labour relations

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[1] hans.agotnes@ahkr.uib.no
Orcid: https://orcid.org/0000-0001-5891-4313
[2] Orcid: https://orcid.org/0000-0002-0341-3156

La industria naval noruega y el ascenso del Grupo Aker

Resumen

Este artículo tiene como objetivo analizar los factores que determinaron el desarrollo de la industria naval noruega, y cómo ha cambiado su lugar en la estructura industrial desde la segunda posguerra. Consideramos, además de las condiciones del mercado y las regulaciones políticas, la importancia del cambio estructural en la forma en que opera el capital en la industria. También debatimos el sistema de relaciones laborales desarrollado en esta rama.

Palabras clave:

Noruega; construcción naval; intervención estatal; relaciones laborales

1. Introduction

Norway is a small country, with a population in 2019 of about 5,3 million. Around 1950, it was less than 3,3 million. Despite this, Norwegian shipbuilding firms have in periods played an important part in the world's shipbuilding industry. Since the 19th Century, the country has had one of the world's largest merchant fleets, and shipyards emerged to cater for a large home market for ship repair and building of new ships, copying technology and taking over market shares from British shipbuilders.

In 1950, the shipbuilding industry employed around 18,000 people, seven percent of the industrial labour force. In 2017, about 18,000 also worked in the building of ships and oil platforms (8 % of the work force in industry), according to official statistics.[3] If we look at the production value, it amounted to 5 % of the total for industry in 1950 and 7

[3] See appendix, table 1 and table 4. It must be noted that these figures are merely rough indicators, and that they are not directly comparable over time, since the basis for categorizing has changed several times. Because of such changes, the number of employed in 2017 is underestimated, so that in fact the number would be higher if counted on the same grounds as in 1950.

% in 2017.[4] The fortunes of the sector have oscillated, and there have been major internal changes during this period. But the sector as a whole has survived the crises and market problems without losing its position in the economic structure.

This article aims to discuss what factors have determined the development of the Norwegian shipbuilding and ship repair industry after 1945, and how its place in the industrial structure has changed during the post-war years. In addition to market conditions and the labour productivity of the yards, political regulations have been important, and we consider how state intervention has influenced its survival. We also discuss the role of labour relations. The concept of "the Nordic model of labour relations" has played an important role in public debate on the competitive power of industry, implying that it denotes a specific variant of capitalism, characterized by relations of trust and cooperation between managers and workers and their organisations.[5] We discuss the role of this system of labour relations in the success of shipbuilding and how these relations have changed.

The framework for our analysis is a periodization in three distinct periods. Like in the rest of the world, there was a decisive turning point in the fortunes of shipbuilding in the mid-1970s caused by the shipping crisis. In the Norwegian case, one could say that a continuous production cycle started after the war and ended around 1975. During this period, production volume and employment increased. In the next phase the sector underwent a major restructuring as firms were adapting to new market conditions, while other production sites were shut down. Oil extraction activities in the North Sea were instrumental in the consolidation of new markets, and here state regulation of market access played a major role in protecting the interests of domestic firms. In the third phase, from around 1990, Norwegian yards were again exposed to intensified international competition. In this period, a process of rapid capital concentration changed the power relations in the industry.

Of course, changes in the capital structure and the way capital operates in the industry also took place in the earlier periods. Initially,

[4] *Statistical yearbook* 1952 and Strukturstatistikk for industri og bergverksdrift 2017, Statistics Norway: https://www.ssb.no/statbank/table/08597/tableViewLayout1/

[5] Heiret (2012).

shipbuilding and ship repair in Norway were generally conducted by production sites run by independent firms. But by the 1950s an industrial group was formed, as the Oslo firm Akers Mekaniske Verksted acquired other yards as subsidiaries geared to the mother firm's production program. Over the years this group grew and became dominant in the sector. The analysis of this process will therefore successively follow two paths: the development of the branch as a (statistical) whole; and the development of a core element, the industrial groups, and in particular, the Aker Group, which was the most important.

The source material we use are of two types. First, statistical sources on the development of shipbuilding take the official figures from Statistics Norway as a starting point and are supplemented by surveys undertaken by public commissions. Further, materials from the Branch Council for the Shipbuilding Industry is used to cover the assessments and political initiatives of political and industry leaders. Secondly, the analysis of the Aker Group and its Stord yard builds on extensive personal and colleagues' work, and especially on our participation in a recent project to write the history of the yard that drew on an extensive use of interviews with the yard's workers' representatives, managers and engineers.[6] This material is basic to our understanding of developments during the last decades.

We first outline the significance of shipbuilding in the industrial structure in the first phase, pointing out its economic and organisational role in industrial life. Thereafter, we briefly discuss the branch's relations to the state: What interest did the government have in this sector, and what impact did the sector have in the political system? The rest of the article discusses the fate of the branch in the three periods: The expansion phase 1945-1975, the restructuration phase between 1975 and the 1990s, and finally the adaptation to more globalised competition from the 1990s.

2. Shipbuilding's place in the industrial structure

Industry was the dynamic force that led economic growth in Norway after 1945. The industrial sector as a whole accounted for nearly one third of the country's work force between 1945 and the 1970s. The industrial structure comprised different branches based on production of

[6] See the source overview for more detail.

raw materials and semi-manufactured products, like iron and copper ore, chemicals and metals, pulp and paper. The consumer goods industries were also important, even if production of textiles, clothes and shoes was diminishing with the development of free trade agreements in the 1960s. Especially central to the industrial structure was the engineering industry, producing machinery, steel structures, and other mechanical equipment, including steel ships. In the years around 1950, about 30 % of the industrial labour force belonged to this branch. About 7 % of all workers were employed in building and repair of steel ships. In addition to those directly employed in shipbuilding, maybe as many as fifty percent more working in other branches were producing equipment for the yards in 1972.[7] And in the following years, until its culmination in the 1970s, shipbuilding's share of the work force was increasing (Table 1).

Compared to other shipbuilding nations, the branch in Norway has been characterized by a very low degree of concentration, with a large number of firms, most of them small and located all around the long coast. Official statistics reflect this structure: in 1972 there were 194 registered firms in 1972 employing 30,352 workers, with an average of 63, 6 workers per firm. These figures hide the diversification of the sector. The largest 16 yards (with over 500 employees) employed 63 percent of the total workforce. 61 yards that employed over 50 workers accounted for 87 percent of the total work force. This means that the remaining 133 units were very small, with 28 employees on average. Thirty years earlier, the situation was not very different: 71 percent of the work force worked in the 18 largest yards, which each employed almost 500 workers, while the rest of the yards employed on average 34 each.[8] The historical background for the many small-scale firms may be found in the class structure of rural Norway, where many people lived off fishing from their own boats, representing a market for local firms in building and repairing the small vessels and their motors. In the 1950s, many of these firms started to build boats in steel instead of wood and were able to build vessels for local passenger routes and other means of coastal sea transport. Later on some of them also took a further step into the medium-sized category.

[7] NOU (1974, 361) gives an estimate of 10-15000 persons working in other sectors.

[8] Aamundsen (1941, 18f.), see table 2.

The large and medium-sized yards originated from another social context. They were usually situated in the larger coastal towns. These firms were established for building and repairing the ships of the urban shipping firms managing the merchant fleet sailing in international waters. It is these yards that interest us here. They have been central to the technical and economic development of the industry, and also the most influential in politics. The major shipyards were concentrated in the capital and the Oslofjord district. A 1941 survey of the 18 Norwegian yards building ships on a regular basis shows that 10 yards were situated in coastal towns in this heavily industrialized area. The Oslofjord district represented a concentration of large workplaces for metal workers and also for engineers, with a common labour market and strong organizations catering for their social interests. The situation was not very different at the end of the growth period. In 1972, of the 16 yards with more than 500 workers each, 11were situated in the same area, and were mostly the same ones as thirty years before.[9] In addition, there were also some important yards with a relatively large work force on the west coast which played important roles during the growth period, and which from the 1970s became central in the transition to the production of offshore installations. It must be added that ownership was now more concentrated than these figures show, because of the formation of industrial groups (see below).

Since the 19th century, therefore, the basis for the large yards has been the merchant fleet, which has been important in Norways' economic structure and one of the largest in the world. Its share of the world fleet's tonnage was 6,9 % in 1939, and 8,2 % in 1973.[10] This fleet contributed significantly to the gross national product, a circumstance of special importance because it yielded vital foreign currency income for economic development during the early postwar years with restrictions on international payments. The shipping industry was therefore politically influential. Shipping firms had strong relations to many shipbuilding firms. They were majority owners in many of them, and in so far as they placed orders for ships in Norway, had close contacts with yards on technical questions of ship design.

All in all, shipbuilding was central to the economy for various reasons. First, the value of production and of the deliveries of material

[9] Aamundsen (1941, 18f); NOU (1973, 13).
[10] NOU (1974, 16).

and equipment from other firms were considerable. The engineering industry as a whole played a leading role in industrial development, by driving technological innovation and fabricating production equipment, but the shipbuilding firms in particular were regarded as "growth centres for competence".[11] Secondly, the branch represented employment for many people and was basic to the life of many local communities. It also represented an influential part of the organized interests in industry, its professional organizations being dominant in formulating employers' strategies towards the state. The organized interests of shipbuilding firms, which were also in many questions in close cooperation with the ship owners, therefore weighed heavily in economic policy affairs. The same was the case for workers: metalworkers showed a high ratio of union membership, were central in formulating and fighting for the organized interests of the central trade union organization, and their most important strongholds were the large yards.

3. The role of the state

State intervention in the shipbuilding industry has played an important role in its whole post-war development. The organized interests of the industry had their impact on the political regulations of the shipbuilding market in several ways. The unemployment crisis in the interwar years prompted unions' claims for political remedies. The conditions of the shipbuilding industry engaged political authorities, especially after the social democratic party (DNA, literally the 'Norwegian Workers' Party') took over government in 1935, with a programme geared to use public resources to promote industrialization. One of the proposed projects engaging both industry's leaders, metal workers' organisations and the government, was a scheme to modernize and greatly expand production capacity in shipbuilding. In the following years, a programme to secure state support for investment in shipyards was negotiated. In the early post-war years, parliament granted state funding for investment in production facilities to some of the bigger yards. This was just a small part of the investments made in the period, but it signalled the state's interest in the sector branch as an important one for the national economy.

[11] NOU (1974, 362).

The situation after the war posed special problems for a government that had as its primary task to rebuild the economy after five years of German occupation. Necessary materials were scarce, and foreign currency remittances were restricted in order to give priority to some imported goods. The opportunity to order ships abroad was strictly regulated. As most shipping countries needed to rebuild their own commercial fleets, their yards were busy with domestic orders. Therefore, if Norwegians shipping firms could not raise capital and get contracts with yards abroad, they had to order new ships at home. Furthermore, during the 1948-1951 years the government prohibited contracting ships outside Norway. The situation opened market opportunities which resulted in investments in Norwegian shipyards. During the 1960s, international trade was gradually liberalized, and the protection of shipbuilding was reduced. But active government participation in the affairs of the industry continued by means of the "Branch Council for the Shipbuilding Industry", established in 1947[12]. Originally, the branch councils were conceived (at least by the unions) as vehicles for socialization of industry. Yard managers, therefore, were reluctant to participate in them. But councils soon became an organ for cooperation between state, management and unions, and coordinated their vested interests in order to influence political decisions in favour of the industry. They discussed the market situation and made initiatives to further the industry's competitive power. An important issue during the 1960s was the question of subsidies. With the cheap credit lines Japanese yards offered to ship owners in mind, the council recommended government subsidies to allow Norwegian yards to obtain loans on similar conditions. The government was attentive to such suggestions. In 1959 an institution with state participation for giving credit to the building of ships at Norwegian yards was established. Later, the state increased its support several times. When the crisis struck in the 1970s, the government intervened more directly. First it prohibited extensions of the building capacity of the yards, and then planned reductions and switching production to new markets. Substantial public funds to support many companies secured their survival, in several cases made the transition to offshore production possible.

[12] Excerpts from the annual reports of the Council of the shipbuilding industry are printed in *Norsk Jern- og Metallarbeiderforbund. Beretning on forbundets virksomhet* each year from 1947 to 1980.

Of decisive importance for the fate of the yards after the oil crisis is also the so-called "Norweganization policy" in relation to the opening of oil extraction in the North Sea. After oil was discovered at the end of the 1960s, the oil companies had to accept the condition to transfer competence in offshore operations to Norwegian firms. The state also established its own company, Statoil, in order to gradually take over operations of oil fields. Thus, it became possible for shipbuilding firms and the engineering industry more generally to develop advanced products for the oil industry and secure a strong position in the market. State support to enter this new market was probably a necessary condition for the industry to be able to make the transition.

4. The cycle of expansion 1945–1975

When the war ended, Norwegian shipbuilding could look back on 25 years with a very bleak production record. None of the yards had been able to build ships to their full capacity. They had become less and less competitive, despite the fact that the country's large fleet had expanded greatly in the same period. The yards might have a large home market; many of them were partly owned by or had otherwise close connections to shipping firms. Still, most new ships were built abroad. One reason for this is that shipping firms now preferred other ship types than before. The Norwegian commercial fleet of 1920 had consisted foremost of small steamships (70 % less than 4000 tdw), used in the trades between European harbours. In the interwar years, Norwegian firms were pressed out of these trades, and instead invested in ships geared to expand the business of oil transportation. This meant transport between continents, where large tankers with diesel engines were the most cost effective.[13] The expansion in tankers changed the composition of the fleet. In 1950 43,8 % of total tonnage were tankers, 62 % were over 6000 grt and 76 % were motor ships.[14] This was a class of ships that most Norwegian yards had not been technically capable of building. Only one yard, the Akers Mekaniske Verksted in Oslo, had a licence to build ship diesel engines. Also

[13] Aamundsen (1941, 12); Kuuse (1983, 75f).

[14] Historisk statistikk (1994) tab. 20.7: Number and tonnage of vessels and tab. 20.10: The merchant fleet by the size of ships. https://www.ssb.no/a/histstat/nos/nos_c188.pdf.

yard firms were unable to attract the necessary capital to modernize their production facilities.

The fact that most of the ships ordered by Norwegian shipowners were built abroad contributed to the formation of a world market for new ships. Together with other countries with a large fleet and virtually no shipbuilding industry, like Greece, Norwegian demand represented an international market open for global competition.[15] Other European yards delivered most of the new Norwegian ships in the immediate postwar years, above all Sweden. But soon Japan entered the market and took a large share. The first orders from Norway, two whaling vessels, were placed in 1948.[16] Eventually, Japan's growing competitiveness made the cou try the largest supplier, especially of tankers.

In this global market, the question was whether yards would be able to build larger ships. Technological developments favoured ships with high loading capacity which were cheaper to manage (e.g., by smaller crew, better fuel economy and shorter time in port for loading and unloading). As a result, new ships were more cost effective than slightly older ships, and this drove the renewal of fleets. Japanese yards were pioneers in new ships' design.[17] These trends meant that, in order to be awarded contracts, yards had more or less permanently to invest in expanded production facilities.

Other areas where the Japanese were competitive, were short delivery times and low prices. Both demanded a continuous rationalization in the organisation of work, especially in production. Short delivery periods also put a premium on the size of the yard: with many workers employed, the task would of course be finished in less time. Therefore, countries with a high degree of capital concentration in the sector, like Japan and Sweden, had an advantage over the Norwegian yard industry.[18] The cost of a ship, on the other hand, depended on how much work was necessary to build it. Yards measured their effectiveness by the amount of steel processed per work hour. Cost effectiveness was in practice handled by schemes to reduce the amount of work laid down in the product.

[15] Olsson (1983, 125ff., 189).
[16] Chida & Davis (1990, 83).
[17] Chida & Davis (1990, 117).
[18] In Sweden, six yards represented 85-90 % of the purchased materials (and thereby of production); Kuuse (1983, 7).

During the 1940s, a general conviction emerged among Norwegian yard leaders that it would be possible to regain a share in the shipbuilding market. Given the extraordinary demand for tonnage because of war losses, and the restrictions on international payments, they anticipated favourable conditions for domestic production. All large or middle-sized firms made plans to catch up with their foreign competitors. The first decade after 1945 was used to rebuild berths and workshops on an extended scale in order to build large ships. But they had to be able to build ships at competitive prices. Here, it was obvious to yard leaders that the production system used in war production in the USA must lay at the basis for their plans for the future. It included block building of the hulls and welding together of the parts, an innovation that was also implemented in other shipbuilding countries. Block building would make production more flexible, facilitating prefabrication of parts and the assembly of sections of the hulls in assembly halls. This way, several sections could be built in parallel before they were mounted on the berth. In the existing practice, each steel profile and plate were assembled on the berth after the previous one had been put in place.[19] The new methods promised to reduce the work hours necessary to build a hull, and to make the building process more effective, a potential that was gradually exploited during the following decades.

The implementation of the new production system was a major transformation that took several years and demanded heavy investments. Larger building berths were re-arranged to build large hulls, but market conditions made it hard for the firms to realize their extended capacity potential. For example, since 1920 Rosenberg Mekaniske Verksted, one of the big yards on the west coast, had been technically able to build ships up to 20 000 tdw. But virtually no new ships had been built before the war, and the vessels actually built in the late 1940s were much smaller. The yard invested in new facilities every year since 1945, but it was not until 1950 that it was able to build the first large ship (though because of low productivity the economic result of this project was meagre).[20] Thereafter, until the late 1960s, when Aker took the lead, the yard consistently delivered the largest ships built in Norway. Some of the remaining yards were

[19] For a thorough analysis, see Andersen (1986).
[20] Nerheim & al. (1995, 202f).

slower to implement the change.[21] But by the mid-1950s most yards had completed the transition.

During the 1950s, then, the Norwegian yards were transformed on the basis of the new production system, block building and welding. At the end of the decade, the total building capacity had risen to 300 000 – 350 000 grt per year, twice as much as before the war. What was actually built was less, but finished tonnage quadrupled between 1951 and 1961.[22] A symptom of the growing competitive strength of the domestic industry was that during since 1950 total tonnage delivered to Norwegian shipping firms grew from 9 to 30 % or total deliveries. Whereas in 1961 actual size of ordered ships ranged from of 60000 to -75000 grt, ten years before the largest ship that Norwegian yards were able to build was 12000 grt.[23] A precondition for this success was renewed investments in facilities in order to build the larger ships that were in high demand. In the years round 1960, several large yards constructed building docks, a major innovation compared to the traditional berths. Efforts to work more efficiently became a permanent part of the work organisation. The first phase of rationalizations, introducing block building and welding, was followed by "sustained efforts" to "modernize and rationalize" production. Investments in lifting equipment with higher capacity made it possible to prefabricate ever larger blocks. More efficient equipment for marking and cutting was introduced. First and foremost, changes in the organization of work were implemented; as from the early 1960s, the importance of planning was especially stressed. The firms benefited from innovations in other countries, through delegations visiting foreign yards, and through the work of research institutions. The Council of the shipbuilding industry argued that intensified research in Norwegian institutions was important in order to "achieve optimal benefits from international research results".[24]

[21] Magdal (1993, 283).

[22] Excerpts from the annual report of the Council of the shipbuilding industry, in *Norsk Jern- og Metallarbeiderforbund.* B*eretning on forbundets virksomhet (*1959, 87). For pre-war capacity: Aamundsen (1941, 19). In 1959 244500 grt were delivered from Norwegian yards. Excerpts… (1959).

[23] Excerpts from the annual report of the Council of the shipbuilding industry, in *Norsk Jern- og Metallarbeiderforbund. Beretning om forbundets virksomhet* (1961, 244).

[24] Excerpts (1969, 113).

In the period 1960-1975, the capacity of the major yards was further augmented by investments in docks and workshops. Employment grew, too, but at a modest pace. Measured by the amount of steel processed per worker, productivity was increasing rapidly (admittedly, partly an effect of the increasing ship sizes). But despite all the investments and the increased production, profitability was not the best. The yards complained year after year that they had to sign contracts at a loss. The Council of the industry identified the cause in global overproduction, which depressed prices. First towards the end of the 1960s this situation changed. In 1969 the branch was booming. Now the yards could at last produce at full capacity.

The development of the Norwegian yards since the war, their modernization and constant rationalization of production and their ability to build more and more advanced products, had made them more similar to the industry in other countries. Several Norwegian yards increased the size of the ships they built at more or less the same pace in this period, competing in building ever larger tankers. They were part of a global production system characterized by a logic of development common to the competing yards. An important difference, however, was the size of workplaces. The large Norwegian yards were small in international comparison. The decentralized structure of the industry gave Norwegian firms a disadvantage compared to the big Swedish and Japanese, with their large capital bases and high production volumes.

Then in the 1950s, a concentration process started in Norwegian shipbuilding. Akers Mekaniske Verksted (AMV), adopted a strategy to spread production on different units by combining several yards in the production process. This firm had the advantage of being the only one in the country licenced to build ship diesel engines when the war ended.[25] It also had one of the biggest shipping firms as its owner. The yard was situated in the capital, without enough space to build large ships. Aker's strategy to solve this problem was to acquire other yards outside the city in order to build the large hulls, which would then be moved to the capital to be outfitted. In 1956, the Oslo firm bought a small yard on the western coast, establishing Stord Verft, where heavy investments were made. A building dock with capacity to build hulls of 65000 tdw. was finished in 1958, and after a few years extended to 100000 tons.[26]

[25] Two other yards soon acquired such licences, but the rest continued to rely on outside suppliers of diesel engines.

[26] Grove & Heiret (1996, 100).

By acquiring majority shares in other yards, AMV established the first real multi-unit group in Norwegian shipbuilding. The number of subordinated units grew; ten years after the first acquisition another large firm was bought, Bergens Mekaniske Verksteder. Now AMV controlled five units, and had the option to integrate their building programmes in its overall strategy. In particular, several units around the coast built sections of hulls that were then towed to Stord to be assembled, and thereafter the hull was towed to Oslo to be equipped. This strategy enabled AMV to build supertankers of ever larger size, the only firm to enter the most keen struggle to secure orders for the largest tankers. While the largest ship built in Stord until 1959 was 6000 grt, in the 1960s the tonnage grew from 20000 grt to 110000, and in 1975 to 140000.[27] In the early 1970s it was by far the most important shipbuilder in the country, representing 28 % of employment in the larger firms in the industry. By that time the concentration of ownership had resulted in the formation of five other groups controlling several production units. The six groups together controlled 44 % of employment in the large firms.[28]

5. Production system and industrial relations

The imperatives of competition in the international market resulted in the investments in production facilities and rationalization of the yard organizations during the expansion phase. But it remained to realize the potential for productivity gains that lay in the production system and in the ability to build the types of ships with the fastest increase in demand. The actual performance of production depended on the people doing the work. The specific form of relations in the workplace, between managers, foremen and workers, must therefore be considered as a factor in defining the efficiency of the production process.

Shipbuilding based on block building poses demands on the organisation of the production process; coordination of tasks, workers and material in order to secure a cost effective process. As the production system has potential for ever more cost-cutting, it tends to become more complicated over time. During the growth phase, the role of the engi-

[27] Myklebust (1994, 207f). Figures in dwt converted to grt: https://www.sjohistorie.no/no/skip.
[28] NOU (1973, 19).

neers became more important. Both the technical work, the theoretical construction of the ships, and the planning of production became more complex. The ratio of engineers to workers thereby increased.[29] This ratio expresses a changing balance between the two groups in the production process: More and more decisions were taken as part of the design of the ships. From early in the 1950s, optical marking was introduced, i.e., the form of the steel plates was transferred directly from the drawings to the plates. The next step was to let burning machines automatically cut the steel guided by the optically transferred drawings, and eventually numerical drawing and burning machines were developed which could transfer the design of the parts on the basis of information fed from the designers' calculations.

A core competence of the skilled plate workers was thereby transferred to the engineering departments. Simultaneously, planning and controlling the building process tended to become more central to economizing production, another factor strengthening the role of the engineers. As already mentioned, the key factor in monitoring cost effectiveness was the throughput of steel per work hour, and workers being idle because they lacked the means to do their task meant increased costs. The rationalization of the work process seemingly did not generate conflict with those working in production. The skilled production workers were in favour of measures that made the process more cost effective. To understand why, we need to consider the relations that characterized the work ethos in this industry.

A basic condition for profitable production, as well as for the living standards of workers, is the way the firms' relations to their work force is regulated. The system of labour relations which had developed during the first decades of the 20th Century was founded on the principle of negotiations between nation-wide labour market organisations and on the active participation by the state in regulating the negotiating procedures. Agreements covering the whole country were signed for periods of two or three years during which strikes were prohibited. In case negotiations ended in conflict, the government could intervene by dictating a new agreement. During the first period after the war, on several occasions the general wage tariffs were fixed by the state in this way. The government wanted to limit growth in wage levels in order to prioritize investments. In this way, industrial peace

[29] For the following, see Ågotnes & Heiret (2017).

was generally secured. Metalworkers had, from the beginning of the 20th Century, been able to formalize certain principles that ruled their relations both at industry level and with management in the workplace. A formalized agreement at national level whereby the minimum wage level was central secured these principles. They had been fighting hard to get these principles codified and to defend them during the inter-war years. An effect of the process was a strong union organisation with members highly conscious of their common interests, a trait that characterized the organisation into the postwar period, especially in larger workplaces with pre-war traditions.

In everyday experience, industrial relations are above all enacted at workplace level. In the engineering industry, wages were dependent on piece rates negotiated between foremen and work teams in the individual workplaces. Metal workers' real wages were therefore a question of what they could earn from piece work. Workers expected to earn considerably more than their hourly wage when they did piece work – 50 % more was often presupposed as ordinary. Despite all day-to-day haggling with foremen over the setting of piece rates, this system (which of course was in general use in most shipbuilding countries), was also an expression of a social relation embedded in the practice of production. It expressed workers' expectations about the *just* payment for a given job, and a moral claim that the firm should accept rates conforming to these expectations.

As a result, they experienced the interest conflict with management on a day-to-day basis, especially in connection with firms' efforts to gain control over wage development through time measurement and work studies which were generally introduced in the yards after 1945. Together with the bargaining process at national level, the piece rate system gave concrete form to the Norwegian class relations in this branch of industry.

During the 1950s, the piece rate system was the most important mechanism by which metalworkers could gain increases in their real income. During this period the central bargaining fixing hourly wages was tightly controlled by the government, which prioritized investment, especially in industry, in order to increase national economic growth. Workers would expect that their earnings would reflect the economic results of their firm. They just found that the gains achieved through productivity increases should be shared between the firm and themselves. As long as this condition was fulfilled, they were in favour of the piece rate system, which they viewed as the mechanism that could give them their share of the values produced.

They also conceived the principle of open negotiations as a basic right: Piece rates should be freely negotiated. If the firm did not respect that, e.g. by setting the rates on the basis of time measurement of the work operations, it would mean conflict.[30] The expectations that they had a *legitimate right* to share the value added in production with the firm seems to be foundational in the working ethos of the metal workers of the period. The workers of the large yards, the strongholds of the metalworkers' union, played a central role in enforcing the ideal in real life.

The ideal was alive not least in the Aker Group, where relations between management and the production workers developed in a special way. In the 1950s, management in the Oslo Yard found that the piece rate system had become a hindrance for further productivity gains. If the overall coordination of production was becoming more important for productivity than the work pace of each worker or work team, another form of motivation would be appropriate. The local union leader was also interested in a change. He was a determined adherent of cooperation on productivity as a way to a better life for workers. In 1957 the parties in the yard agreed to introduce a fixed salary combined with an agreement that the workers should contribute to increase productivity, and that actual increases would result in wage increases through local negotiations.[31] The system spread to the other units in the group, and later to the rest of the yards and other parts of the metal industry.

The new wage system introduced important changes in the relations in the workplace. It tended to shift workers' focus from their individual piece rated jobs to the smooth progress of the overall production. Organized worked elected special shop stewards responsible for productivity work, and a regular and intimate cooperation on cost reductions was established. Regardless of the concrete productivity results, it contributed to establish an atmosphere of mutual understanding with management which, at least in the case of the Stord unit, has continued since. Of course, a presupposition for this cooperation is that union members feel that they are handled justly when it comes to wage and other working conditions,

[30] Cf. Svensson (1983, 273f.) about similar relations in Sweden: Workers in the Gothenburg yards were in favour of piece rates and time measurement as method to fix piece rates, precisely because it made it possible to influence their own income.

[31] Grove & Heiret (1995, 87).

and that negotiations are really open. Now higher productivity was supposed to result in wage increases for all workers through local bargaining once a year. In principle, the fixed wage system was just another mechanism to secure the tacit agreement that production gains ought to be split between all parties. Thus it secured the "wage drift" that earlier had been a result of working to piece rates. During the period up to the 1970s this vehicle for wage increase contributed to maintain the fundamental class compromise that, with few exceptions, secured industrial peace.

How successful?

Looking back, the effort of the industry during the growth phase was a success: the yards were able to expand their market share and greatly expand production. According to official statistics, in 1975 output in shipbuilding passed one million grt, and employment reached a maximum with over 31000 workers. This work force did not only build and repair ships. That year only about 60 % of capacity was used to build the usual ship types; it was assessed that 6500-7000 employed were occupied with deliveries for the oil sector (this figure includes building of supply ships).[32] The impact on the branch of the oil extraction in the North Sea had already become visible.

Like in other countries, Norwegian yards suffered from depressed prices during most of the 1960s due to international overproduction internationally. But, like in most other countries, they benefited from state subsidized credit like yards. However, they probably never achieved the same cost efficiency rates of global market leaders in this industry.[33] In addition, the size of Norwegian yards meant that they did not have big financial muscles. Most of them could not have operated with the same profitability of large yards in Sweden or Japan, which were still the most important competitors up to the yard crisis.[34] Those yards have been described as "ship factories", that is specialized enterprises that built similar ships

[32] Norsk Jern- og metallarbeiderforbund (1975, 50).

[33] See Svensson (1983, 291), table 36, with figures for produced grt per employed in different countries – not an accurate measure, but it may be an indication. It shows Norway lagging behind Japan and especially Sweden.

[34] NOU (1974, 13).

in series.[35] Their profitability presupposed a high volume of production, high throughput speed and production at the yard's full capacity. Norwegian yards did not achieve this ideal. But they were more flexible, usually building ships of different types and sizes. This flexibility was probably part of the explanation for their survival. Meanwhile, Swedish yards did not recover after the shipping crisis. Maybe they were less productive, but they were not as dependent on one segment in the market.

It is reasonable to conclude that yards in general were to a certain degree able to compete during the growth period on the basis of productivity. They adopted globally-developed methods, and managed to cut work hours in order to stay in business. The positive attitude of the employees towards productivity work must have contributed significantly to this. Even so, they needed the active support of the state, through both protective measures in the initial phase and subsidized credit later.

6. Crisis and reorganization on the basis of new markets, 1975–1990s

The shipping crisis of the mid 1970s had deep effects on the shipbuilding industry globally. The OECD considered a 40 % reduction in the world's shipbuilding capacity necessary, the Norwegian government accepted this recommendation, and foresaw a reduction of the shipbuilding work force of 6000 posts.[36] The Shipbuilding committee appointed by the Norwegian Ministry of Industry in 1976 proposed a plan to reach this goal, which implied a reduction in employment, but also aimed to help part of the industry to establish itself in new markets. The government was determined to take control over the adaptation process that it saw as necessary, rather than leave to the individual firms to tackle the effects. The yards could no longer obtain export orders because the European countries that until recently had placed orders in Norway now had established support schemes to protect their own yards.[37] The government met the situation by subsidising shipbuilding contracts of firms which under the new circumstances could not compete on price. Others got support for investments necessary to alter their production. In addition, government funding was used to help shipping firms through their liquidity crises. The

[35] Svensson (1983, 291ff).
[36] NOU (1978, 6f).
37 NOU (1978, 6).

measures were seen as anti-cyclical, and therefore as aid for a limited period. The ministries intervened directly in the industry to reach its goals, to lead the firms through the crisis and avoid high unemployment rates.[38]

The crisis hit the Aker Group particularly hard. When the boom ended in 1974, Aker received cancellations of supertankers totalling 2,3 million dwt for ships that should have been built at the Stord unit.[39] Aker, the company building the largest ships ever built in Norway, had followed a dangerous strategy in order to achieve its position. The supertankers built at Stord were ordered by shipping firms operating on the spot market for oil loads. This way, they earned very high profits on oil freights in boom periods. Ship-owners who made long-term freight contracts could build their supertankers at Japanese yards at lower prices than Aker was able to offer, at least partly due to Japanese cheap credit. But the Japanese demanded long-term freight contracts as security vis-a-vis the yard. Speculative shipping firms, therefore, could not get their tankers built in Japan. Aker, on the other hand, was not able to match Japanese terms and had to do business with the speculative firms at a high risk in order to get contracts. These shipping firms were the first to lose freight contracts when the market slumped, while those with long-term freight agreements were still in business.

What saved the Aker Group and the Stord yard in particular was orders for the oil industry. A group of engineers in Aker had started to develop designs for the oil industry. This work resulted in large production of a type of drilling rig that was a success in the market and was also licensed to yards in other countries. The group had recently established a yard specialized in building these rigs, Aker Verdal. When the crisis struck, Aker had also secured the order for the steel deck for a permanent installation in the sea. The establishment in this market made firm survival possible. The building of the platform deck was transferred to Stord. Aker abandoned ship-building and geared all efforts to products for the oil sector concentrated to the two yards, Stord and Verdal. The other firms were sold.

The rapid migration to new markets made it possible for Aker to survive, but it was still heavily dependent on state support. For years after the transformation, Aker was in financial trouble because of losses

[38] NOU (1978, 6).
[39] Mjelva (2005, 110).

originating in cancelled ship projects. In the case of the Aker Group, the state engaged in direct negotiations to keep the firm in business. The result was that the largest cement producer in Norway gained control over Aker, which thereby no longer was a dedicated yard firm, but became a conglomerate of branches (yards, building materials, construction). As a diversified industrial group, it was still one of the largest industrial firms in Norway.

The following period saw major changes in the structure of the industry. In 2000 the number of people employed in building ships was reduced to 25 % of those employed in 1975, according to official statistics. It was a historical coincidence that the offshore oil production was expanding during the crisis, but as a result Norwegian industry was better off than its counterparts in many other countries. The production of deliverances to the oil industry absorbed most of the work force. Protectionist measures helped to secure work for domestic firms. But only some of the yards benefited from the new market. Therefore, the crisis effected a major restructuration and relocalization of the branch. Almost all the major yards in the Oslofjord area were closed down during the 1980s. Here, only small firms remained in the old yard areas. Employment shifted to the west coast, where the large firms now produced oil platforms or modules for platforms, while a number of small yards were building special vessels for the oil industry. The western region had around 25000 workers employed in 1975, a figure that was unchanged in 2000, with a reduction to ca. 20000 in 2005. Almost all of them were engaged in building and repair of ships in 1975, but only 7500 in 2005.[40] The ships built in Norway once again consisted of small ships.[41] Supply ships, for offshore activities, was one important type. This new market provided the basis for the expansion of the relatively small firms of the northwestern region. These technically advanced and expensive vessels represented high production values. They also demanded other professional skills, and offered opportunities to gain a higher profit than what was possible with ship types like the tankers, where the steel work was the main ingredient.

The growing importance of engineering, especially after the transition to production for the offshore sector, meant that large technical milieus were created. They were organized as daughter firms inside the Aker

[40] Bore & Skoglund (2008, 88).
[41] NOU (1978, 14).

and Kvaerner Groups, and worked on ship and rig design and other tasks. Eventually, the different engineering milieus in Aker were merged to Aker Engineering, and from 1975 this major collection of professional skills was directed towards production for the oil sector.

Other firms tried to meet competition and changing structure of demand by specializing their production towards special tonnage. One class was chemical tankers, and another were tankers for transport of liquefied natural gas (LNG). A leading group in the engineering industry, Kvaerner, specialized in LNG tankers after it acquired a small yard where the engineers developed the technology, and thereafter bought the large Rosenberg yard in order to build larger LNG tankers.[42] They had formed Moss Rosenberg Verft, a group inside Kvaerner, in 1969.[43] The group exploited the LNG technology and thereby secured its leading position in a niche in the shipbuilding market. It was later to become Aker's most important Norwegian competitor.

The former Aker units lived on for some years as parts of different constellations. Bergens Mekaniske Verksteder (BMV) is an interesting case. This firm, originally one of the more important and a small local group in itself before it became part of the Aker Group, was now acquired by a newly successful group consisting of small yards of the north west, the Ulstein Group. Ulstein had gained strength during the 60s and 70s by building small, but advanced vessels for the fishing fleet and after 1970 especially supply ships for the offshore business. The attraction of BMV was its successful production of diesel engines for auxiliary machinery. Ulstein soon sold out the shipbuilding department, keeping the motor and reparation departments. The shipbuilding department was taken over by local capital and later by the employees, and the new firm succeeded in getting shipbuilding orders for some time. It eventually delivered the largest ship ever built there before it was closed down in 1991.

The reparation department was also sold after some years, maybe as a result of diverging views on how the unit should be managed. Internal relations in many of the smaller yards in rural areas were different from the ones where the union traditions were more rooted. The way new managers conducted leadership met with distrust in the yard organization. It was sold to another, still smaller, local yard. Eventually, after 2000, it

[42] Nerheim & al. (1995, 296ff).
[43] Nerheim & al. (1995, 300).

became the core of a new group, Bergen Group, which rapidly gained control of several yards both in Norway and abroad (including Rosenberg) and at most employed more than 2000 persons, before being reduced again to a small local player. In the meantime, the yard had built several small, advanced ships for seismic investigation of the sea bed.

The fate of BMV is indicative of a different reality facing the branch after the yard crisis. The end of stable ownership coincided with the end of relatively stable markets. There was also a general trend towards mergers in economic life starting in the 1980s. The build-up of the Aker Group in the 50s and 60s had been founded on a strictly industrial strategy, where firms were bought in order to increase production capacity geared to making a specific product. Now, firms were often bought in order to expand the scale of operations, without regard to their type of production. Production units were at times bought and sold again within a short period of time.

What were the consequences for the relations within the industry? With regard to the labour relations at national level, no substantial changes were made to the formal system. The central levels of the industrial relations system were maintained. As before, wage agreements for the whole metal industry were decided between the main organisations. At this level, the state might still influence the level of wages, but less directly than earlier. Government recommend moderate claims and sought to influence the negotiating parties by pointing to consequences for the economy of higher wage levels. Like in the past, it could also intervene more directly in the bargaining process.

A "test" of the union members' attitudes to the industrial relations system was carried out around 1980. In an effort to limit wage increases, including the local wage drift, the government proclaimed a "wage stop" after the central bargaining process ended without agreement in 1978. The measure made wage increases illegal for the next one anda half years. This measure provoked a protest movement among the union members in the metal industry, led by the workers in the large yards. Workers considered that, on the one hand, there had been a breach of the principle of the right to free negotiations ("the bargaining right"); and that, on the other hand, the state prevented them from earning their fair share of produced value in the industry. The mobilisation had repercussion on the bargaining pro-

cesses in following years, during which yard workers took the leadership again. But after 1986 its energy faded out.[44]

Despite the activism of the local unions, the conditions for the wage struggle had changed. Yards competing for orders of decks for the production platforms met hard competition. A big order like this could keep the work force occupied for several years. Aker Stord built the first deck for a major field in the North Sea delivered by a Norwegian firm, and took it for granted that they would also get the next. When they lost the order to its competitor, Rosenberg, it was experienced as a major setback that sparked a cost-cutting process in the aftermath. In spite of the vast investments in oil extraction, the yards building big offshore installations had to honour offers at the lowest possible price in order to be in business. The oil companies that were in charge of operating the fields, the state company Statoil included, had more or less monopoly power in relation to yard firms which competed fiercely among themselves. The unions had to consider the situation of the own firm before they claimed wage increases.

In the growth phase, the effort of the trade unions had centred around securing for their members a share of the increasing production in the form of growth in real wages, shorter work hours, extended vacations, and a better work environment. After the yard crisis, conditions for trade union activity changed. Local unions engaged more than before in their firm's struggle to secure orders and stay in business. They might have to renounce on wage claims in order to ascertain that the yard got orders. They also struggled to keep down the number of temporary workers, securing work for as many permanent employees as possible. The problem of recruitment of workers had been aggravated by the opening of oil extraction in the North Sea. Due to their high wage level, offshore activities attracted skilled metalworkers. Plate workers and welders in particular were in high demand.[45] Many of them were recruited from the yards. On the other hand, yards' manpower needs became more variable. In order to keep building schedules, it became necessary to hire temporary workers for shorter periods. Manpower firms emerged, and a part of the workforce became more mobile. The ratio of temporary to permanent workers in large yards reached 7,5 % in 1976.[46] It represented both a problem for the

[44] Ågotnes & Heiret (2017).
[45] Norsk Jern- og metallarbeiderforbund (1970, 200).
[46] NOU (1978, 17).

yards and its solution: The work force became less stable, but at the same time a market for temporary workers was created. Permanent workers resented the practice, both because the temporarily employed had higher wages, and because they were outsiders and therefore less efficient workers. After 2000 the recruitment of low-wage workers from the EU area was to pose a new problem for the local unions.

In this situation the horizon and field of action of workers' representatives widened, and industrial strategies became a central concern. It also meant that it became more important to be represented where important decisions were taken, that is in the board of the group, not only the local unit. The task of local union leaders became more complex. It was no longer only a question of defending the immediate working conditions of their members. They had to intervene in the management of the firm, design and apply strategies, enter into alliances with their leaders, and possibly with other players in the market. The content of the relations with management thereby changed. But the active support from the union representatives for the firms' interests continued. The relation of trust and cooperation was still an important asset in the competitive struggle.

7. Capital concentration and intensified global competition, 1990s-2019[47]

The restructuration of the branch and its consolidation on the basis of new markets during the 1980s had resulted in an industry with a different composition. The building of new ships was drastically reduced. Now, production of big installations for the oil sector accounted for most of the activity. The market structure in this sector is different from what was the case for shipbuilding: There are few buyers, quite often only one whose monopolist position allows it to press down prices when there are several yard firms competing to "win" the order (that is the expression used).

From around 1990 the effect of these market conditions was reinforced by changes in the political regulations of the sector. State protectionist measures that secured Norwegian firms a large share of the orders during the 1980s were reversed. In 1993 a government initiative resulted in a project with the additional participation from the industry, and the oil companies in charge of oil fields which aimed at creating conditions

[47] For the following, see Byrkjeland & al. (2019).

for more cost-efficient production. Common standards and contract forms were among the means. The new attitude of government authorities, endorsed by the oil companies, was that the costs of installations in the North Sea should be harmonized with those of oil fields in other regions of the world. The basic premise was that costs must be reduced with 40 %.

The political background for the decision to globalize the cost level of Norwegian producers was, among other factors, an ambition to make it easier for Norwegian oil companies to internationalize. The state-owned Statoil aspired to do business in other parts of the world. In 2001 parliament agreed to partially privatise it and invited private capital to join in on the premise that Statoil would no longer be an instrument for political interests, but was to operate strictly on the basis of the logic of the market. According to the neo-liberal ideas that had gained force in political parties, including among the social democrats, the best way to regulate business was through the market. Hence, protectionism of the initial phase of oil extraction was given up. The ambition of earlier governments to actively support specific industries as part of an industrial political strategy had long been out of the question. As a seal of this political trend, in 1994 Norway joined the European Economic Area agreement with the European Union, which in practice made the country part of the common European market.

The marked shift in economic policy was not only an effect of a new ideology gaining foothold in politics. It was also a question of market strategies. In the early 1990s, it was a common opinion in the sector that the oil production in Norway had reached its peak, and that the oil companies had to find other areas in order to maintain their income. The oil price had also been low since the middle of the 1980s, making smaller reservoirs in the North Sea unprofitable to exploit. That implied fewer orders for the yards, and thereby harder competition between them

As a result of the intensified pressure to reduce their cost level, the yards producing for the offshore sector worked hard to reform their organizations and rationalize production processes. In Aker Stord, comprehensive rationalization projects were running during the rest of the decade. Special attention was paid to the coordination of the work of the engineers who delivered the design and specifications for the installations, and the people who actually constructed them. The ultimate purpose was to let both tasks influence each other – the needs of production should influence the way drawings were made. In this case the yard cooperated with another division of Aker, Aker Enginneering, which had grown to a substantial size.

The focus on rationalization in the shipbuilding period had been foremost on the physical production process – on the logistics of building hull and machinery. In offshore production, where engineering work represented a larger part of work hours, more attention was payed to rationalize their work. During the 1980s and 1990s, digital programmes were perfected to automatize many engineering operations, resulting in substantial reductions in the time needed to produce work drawings. Other programmes were developed to monitor and coordinate the production process and to supervise and control the quality of work, e.g. welding seams. This way, much of the manual work of the engineers disappeared. On the other hand, the complexity of the products had greatly expanded. Engineers delivered much more detailed specifications, which lay at the basis of the production process, than had been the case for ships. The consequences were that a design that was difficult to build would have unforeseen costs. Therefore, cooperation in an early phase between those who did the basic form-giving and those who planned production was important to secure a cost-effective process. Product planning in such a way was easier and had a great potential for productivity gains. Simultaneously, the potential in block building for more effective production was still important and motivated investments in production facilities – cranes with more lifting capacity, for example.

Around the turn of the millennium, there were major changes in ownership and corporate structure in the yard industry. Since the yard crisis, it had become normal that firms were bought and sold. Whereas so far the two giants in engineering and yard production, the Aker and Kvaerner groups, had bought other firms, they were now candidates to be bought. Kvaerner followed an aggressive strategy of buying firms, among them shipyards, at home and abroad, and by 1992 was the biggest shipbuilder in Europe.[48] Aker was still big in oil construction, cement and the building industry, but the price of the company's shares was low. In 1996 an ousider investor bought a large share of the company, and eventually gained control of the whole group. The shift in ownership started a series of reorganizations of the industry. As the new unites were integrated, the takeover of a smaller group of offshore firms resulted in an internal reorganization in Aker. Then, because Kvaerner was in financial trouble after such gigantic acquisitions, Aker took over Kvaerner in 2001. The large

[48] Osland (1992, 31).

engineering departments of both firms were merged. Eventually, the parts producing for the oil sector became part of Aker Solutions, a subsidiary firm directed towards oil services at the global level in more than 30 countries. Finally, the yards producing the big offshore installations were split from Aker Solutions under the name Aker t. Aker thereby became the absolutely dominant player in the offshore deliverance market.

Capital concentration in the branch implied that domestic competition was considerably reduced. But the oil companies had the option to order abroad. When the financial crisis starting in 2008 hit the large yards in South Korea and Japan, it immediately affected the prices for oil installations. Large contracts were signed with yards in South Korea and Singapore. Aker is a relatively small firm compared to the large Asian companies, and is not well equipped to meet competition. The firm has managed to secure work after this setback, however, and as of 2019 Aker's yards still have orders to keep the work force busy. But the future is uncertain. Union representatives claim that their company's strong asset is relations of close cooperation with management. They maintain that, despite a relatively high wage level, this is what makes the Norwegian yard worker competitive.

The new ownership in Aker and its takeover of Kvaerner also affected shipbuilding. The takeover in 1996 brought with it a group of smaller shipbuiding yards into Aker. With the acquisition of Kvaerner, many more was joined, and Aker became the largest shipbuilder in Europe, with 20000 employees in 17 yards around the world.[49] The shipbuilding division was sold in 2007, and was soon bought by the South Korean STX Europe. Later, Italian Fincantieri took over ownership. Some of the small yards on the west coast went through a series of ownership changes during this process.

Commercial conditions for building ships in Norway were now quite different from those prevailing in the 1970s and 80s. Today capital running Norwegian yards is less bound to production facilities. Instead of seeking orders to keep its yard running, corporations tend to first secure orders and thereafter buy a yard that fits the task. Yard ownership has become a more short-sighted obligation. What still ties owners' interests to the social realities of the economic life is the competence which the yard organization represents. Without the expertise and routine of engineers,

[49] Ankerløkken-eventyret.

plate workers, pipe fitters, welders and electricians, profitable production would be difficult. Quite often, when a yard is bought by a new owner, employees stay, such that local yard organizations tend to be preserved through ownership changes. Surprisingly in spite of this trend and strong oscillations in markets, many yard sites are still in business,

If we take a look at official statistics again, we see that by the end of the 1980s the shipbuilding industry had suffered a serious setback. In 2000, the number of workers employed in ship-building was reduced to less than half of those employed in the offshore sector.[50] Yet, many yards were still active. In part such reduction was due to the fact that some jobs were exported. The yards no longer tried to compete with low-cost countries for steel work. Orders placed with Norwegian firms usually involved having the hull built abroad, at first quite often in Poland, while the design, other engineering work, and the outfitting were done in Norway. Moreover, ship types had changed into more complex and technologically advanced ones, for example chemical tankers, gas tankers and supply ships, though these last ones were small. Norwegian merchant fleets demanded far larger ships, and had them built abroad. Yards in Norway concentrated on niche markets where the value added was high per ton of steel. A large percentage was exported.[51] The industry has experienced a production, market relations, and capital structure internationalisation. Takeovers by new owners may open opportunities in new markets. In 2019 there are almost no supply ships in order, but yards have contracts to build 16 smaller high standard cruise ships. The Vard group, owned by italian Fincantieri, are to build seven of them. Hulls are built in Vard's yards in Romania, and equipped in Norway.[52]

At the formal level, labour relations in the industry remain unchanged. In the dominating group Aker, union representatives have influence at all levels in the organisation and often play an important role in decision making. Internal relations in Aker is a good example of the reality of the Nordic Model. Their main characteristics are a high degree of mutual trust and of close cooperation between managers, engineers and production workers. In particular, they join forces in the never ending aim to lower production costs. Relations between workers' representatives

[50] See table 3.
[51] Osland (1992, 18)
[52] *Klassekampen* 10.08. 2019.

and management has probably become more intimate and based on faith. Workers are allowed more freedom in executing their tasks, that is at least do they have a degree of influence over their own work. This development does not seem to change local union representatives' determination to defend what they conceive as the rights of their members. But, with their inclusion in discussions about how to run the workplace, they also tend to understand management's point of view in upcoming issues. Union representatives in Aker have access to much of the same information as top managers, and will renounce on claims if it is a question of the firm's survival. At the same time, formal industrial relations are intact on all levels, and the national union is still influential.

On the other hand, the workers' local unions are not in the same strong position as earlier. Since the 1990s, irms have downsized their permanent work forces and rely on large groups of temporary workers hired from manpower firms. In October 2019, for example, the number of temporary workers at the Aker yard at Stord is twice the number of the permanent ones. Few of the short-term employed are organized. The same situation prevails in many yards.[53] The high grade of organisation which characterized yard workers is reduced. This means that the majority of the employed are not part of the relations of cooperation in which the permanent workers are included. They may also be unable to communicate with each other because they speak different languages.

8. Concluding remarks

The firms of the shipbuilding industry managed to establish production based on efficient technical and organisational principles in the years following the Second World War, and to expand production and employment until the crisis of the 1970s. Undoubtedly, a condition for this was that the firms managed to attract capital needed for investments that enabled the transition to the new production system. Political regulations contributed to this by making shipbuilding profitable. When the system yielded gains through cost reductions during the whole period, this owed much to the cooperative attitude of the workers. Through their local unions they participated actively in productivity work, with constant increases in productivity on the premise that they would get a share in productivity gains.

[53] *Klassekampen* 11.10. 2019.

Later on, the development of a market for oil extractions offshore installations represented new market opportunities for several shipbuilding yards, which in terms of employments is nowadays more important than the actual building of ships. Direct state intervention secured a position in the market for Norwegian yards. Intensified global competition that Norwegian firms experienced from the 1990s on, aggravated by the financial crisis of 2008 and several instances of oil price reductions, intensified the pressure for cost reductions, made its impact on industrial strategies, and led firms to be more internationally oriented.

The yard industry of today is a very different business and workplace compared to what it was in the early postwar years. Production in general is high-tech, firms are more integrated by common ownership, and production units in part of the industry are more prone to be sold and bought. Capital concentration has become very high in parts of the branch, and domestic competition is quite reduced. The core of the industry, producing the huge constructions for the offshore industry, is to a large extent controlled by one firm, Aker. But this part of the industry is exposed to global competition to an extent which can be compared to the situation in the supertanker era.

The workforce employed in the yards has also changed. Manpower today is more qualified, with a larger share of engineers and skilled workers having higher and more specialised skills in a high-value activity. The steel work that until the 1970s was the most important, is now almost always outsourced to other countries. It has become commercially almost impossible to build hulls in Norway. Instead, they may be built as far away as China, to be later equipped at yards in Norway.

Seen from the point of view of individual production units, work security has been reduced due to the more frequent acquisitions and sell-outs by capital operating in a global arena. Even if the units often continue operating under new owners, such changes influence the bargaining power of employees' unions. Recourse to hiring temporary workers works in the same direction. Conditions of organized working life in this branch of industry have also have changed considerably in this branch of industry that traditionally had a strongly organized work force.

Appendix

Table 1
Employment in the shipbuilding industry relative to the metal industry and industry

	Industry		Metal industry		Shipbuilding industry			
	Establishments	Employed	Establishments	Employed	Establishments	Employed	Metal's share of total	Shipbuilding's share of total
1950	6.166	257.399	1.391	72.859	85	17.702	28,3	6,9
1955	7.677	293.975	1.708	83.111	61	19.123	28,3	6,5
1960	8.672	307.610	2.000	89.538	88	20.010	29,1	6,5
1965	18.238	367.518	4.577	112.132	96	23.152	30,5	6,3
1970	14.990	369.871	3.397	116.772	162	28.397	31,6	7,7
1975	14.357	383174	2.275	131.911	224	32.736	34,4	8,5

Source: Statistical Yearbook several years, and Industrial Statistics, Statistics Norway.

Table 2.
Firms building and repairing steel ships after size, 1941 and 1972

	1941			1972		
	Firms	Employed	Employed per firm	Firms	Employed	Employed per firm
Large firms	18	8.850	491,7	16	19.159	1.197,40
Medium sized				61	26.609	436
Small firms	105	3.484	33,2	133	3.473	28,1
All firms	123	12.334	100,3	194	30.352	156,4

Sources: Aamundsen 1941:18f., NOU 1973:58: 8ff, and Production statistics, Industrial statistics, Statistics Norway.

Table 3
Total output of shipbuilding in Norway, new ships built for Norwegian shipping firms and she share built in Norway, 1957-1990

	Total output	Built in Norway		Built abroad		Share of tonnage built in Norway
	Grt	Ships	Grt	Ships	Grt	Percent
1957	197	60	185	78	722	20,4
1960	243,2	38	266	51	532	33,3
1965	474,2	56	366	75	1686	17,8
1970	706	64	464	46	1762	20,8
1975	1073	62	585	93	2572	18,5
1980		34	105	10	373	22
1985		20	72	14	496	12,7
1990		19	17	20	481	3,4

(Concerns merchant vessels of more than 100 grt.)
Source: Historisk statistikk 1994, table 20.9.

Table 4
Establishments and number of employed 1970 – 2000

38411 building of ships. I 1000 kr			38241 Manufacture of oil and gas well machinery (Oil rigs, from 1993: 1993: Oil platforms)		Total	
Year	Establish-ments	Persons engaged	Establish-ments	Persons engaged	Establish-ments	Persons engaged
1970	162	28397			162	28397
1975	224	32736	38	7602	262	40338
1980	216	27375	57	10050	273	37425
1985	142	13609	84	15821	226	29430
1990	126	10079	75	14248	201	24327
1995	111	9527	79	17906	190	27433
2000	162	8498	105	19658	267	28156
2007					485	21441
2010					449	22522
2015					422	25702
2017					382	18229

Source: Industrial statistics, Statistics Norway

9. Sources used

Most of the statistical material quoted in this article comes from Statistic Norway, the state bureau. In addition, we have also drawn on a survey conducted in 1941 by yard manager C.N.R. Aamundsen . Special government commissions in the 1970s collected statistical overviews over the major firms, published in NOU 1973:58, NOU 1974:51 and 1978:4. The yearly reports of the Branch Council for the Shipbuilding Industry, as summarized by the national union of metalworkers, is quoted as a source for both statistical data and industrial policies.

The material on the Aker Group and its Stord yard is collected by members of a research group focusing on industrial relations in the 1990s: Grove and Heiret 1996, Mjelva 1995 and 2005 and Haga 1989. In 2018 and 2019, we participated in aproject to write the history of the yard together with Martin Byrkjeland, Knut Grove, Trond Erlien and Eva-Marie Tveit (Byrkjeland & al. 2019). We have consulted the yard archive and conducted extensive interviews with people in key positions in the firm, many of them with a carreer at the yard starting in the 1980s. The interviews are the most important sources for our discussion of technical and economic development since the crisis of the 1970s.

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South Korean Government's policy on the shipbuilding industry: transformation from the industrial policy of developmental state towards neo-liberal one (1953-2018)

Wonchul Shin[1]
Professor in the Department of Sociology
Pusan National University

Abstract

Against the backdrop of the success story of the Korean shipbuilding industry, numerous legends and hero stories have been created. On the one hand, they advocate the developmental dictatorship while highlighting the positive role of Park Chung-Hee and the government. Others have emphasized the role of Chaebol owners or entrepreneurs from a market-oriented perspective. Strangely, the two views are often combined at the same time. This paper went beyond the discussion of success factors to examine how the relationship between the government and the market has changed and what difficulties and problems the shipyard workers had to face in the process. In particular, the paper has dealt with government's policy for the shipbuilding industry during the recessions.

This article provides an overview of the Korean government's policy for the shipbuilding industry and the business strategy of the Hyundai Heavy Industries (hereafter, HHI), South Korea's leading shipyard. Especially, the historical process of structuration of the state-market relations, or the government-industry relations would be focused on. Labor disputes related with restructuring will be also briefly mentioned.

The first part will investigate the historical transformations from the shipbuilding promotion policy of the developmental state into the neo-liberal policy for restructuring to deal with the shipbuilding depression. The effects and implications of such transformation on labor relations will also be noted briefly. The second part will deal with so called the success of the HHI, and its recent restructuring.

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[1] wcshin@pusan.ac.kr
Orcid: https://orcid.org/0000-0001-6528-6183

Keyword

Korea, shipbuilding industry, public politics, state-industry relations.

Política del Gobierno de Corea del Sur para la industria de la construcción naval: del estado desarrollista al estado neoliberal (1953-2018)

En el contexto de la historia exitosa de la industria naval coreana, se han creado numerosas leyendas y personajes heroicos. Por un lado, se considera a la dictadura desarrollista al tiempo que se destaca el papel positivo de Park Chung-Hee y el gobierno. Otros han enfatizado el papel de los propietarios o empresarios de Chaebol desde una perspectiva orientada al mercado. Curiosamente, las dos visiones a menudo se combinan. En este artículo profundizamos el debate acerca de los factores de éxito para examinar cómo ha cambiado la relación entre el gobierno y el mercado y qué dificultades y problemas tuvieron que enfrentar los trabajadores del astillero en el proceso. En particular, en este texto analizamos la política del gobierno para la industria de la construcción naval durante las recesiones.

Este artículo proporciona una visión general de la política del gobierno coreano para la industria de la construcción naval y la estrategia comercial de Hyundai Heavy Industries (en adelante, HHI), el astillero líder de Corea del Sur. Especialmente, se centraría en el proceso histórico de estructuración de las relaciones entre el estado y el mercado, o las relaciones entre el gobierno y la industria. Los conflictos laborales relacionados con la reestructuración también se mencionarán brevemente.

La primera parte investigará las transformaciones históricas de la política de promoción de la construcción naval del estado en desarrollo a la política neoliberal de reestructuración para enfrentar la depresión de la construcción naval. Los efectos e implicaciones de tal transformación en las relaciones laborales también se mencionarán brevemente. La segunda parte abordará el llamado éxito del HHI y su reciente reestructuración.

Palabras clave

Corea, industria naval, políticas públicas, relaciones estado-industria.

I. Introduction

The shipbuilding industry of South Korea (hereafter, Korea) is widely known for its remarkable success stories. The market shares of Korea started at 1.3% in 1973, rose to 9.0% in 1980, and 30.2% in 1987. Korea has emerged as a major player in the global shipbuilding in the late 1980s and maintained its leading position until now. Legends and heroism were spread through media articles and publications of business history bragging about the success of the Korean shipyards.[2]

Western scholars have also paid attention to the success of the Korean shipbuilding industry (Amsden 1989; Jonsson 1995). At first the relationship between the state and the market has become the focus of research by Amsden, who introduced the Korean developmental state to Western readers. Amsden emphasized "a reciprocal relation between the state and the firm" in late industrialization, arguing that the Korean state imposed "certain performance standards from firms" in direct exchange for government subsidies (Amsden 1989: 146).[3] The developmental state approach, however, has serious flaws that downplay the contradictions and negative aspects inherent in developmental dictatorship (Kim 1999: 171-2). Reviewing the relationship between the Korean Government and each shipyard, including Hyundai, Daewoo, and Samsung, Kim (1999) claimed that the government interventions have sometimes resulted in inefficiency as in the Daewoo Shipbuilding case.

Subsequent studies have focused primarily on exploring various factors of the Korean shipbuilding industry's success. In order to build the state-of-the art large shipyards and to construct Very Large Crude-Oil Carriers (VLCCs), the Korean Government and shipbuilders could not but borrow capital and technology from the advanced economies. Thus several scholars paid attention to how new shipbuilders, includ-

[2] The Title of the Part II of the official history of Hyundai Heavy Industries (1998) is "The Legend of Hyundai Shipyard's Founding".

[3] Amsden attributed the presence of the discipline not to the ability of policy-makers, but to the dominant state power over the other social forces including business and labor classes (Amsden 1989: 147). Criticizing Amsden's view of stressing the government's role in the construction of the Hyundai shipyard (Amsden, 1989: 81, 112), Bae (2007) argued that Park Chung-Hee government was not thoroughly prepared to build a large shipyard. He noted the entrepreneurial capacities of Hyundai and its accurate analysis of shipbuilding market trends.

ing Hyundai, secured capital and technology from Europe and Japan in the early 1970s (Bae 2002; Bae 2011), and to the background of decisions of European and Japanese shipyards as well (Sofue 2005; Kang et al. 2016). Emphasizing the timing when Korea's shipbuilding industry entered the global market, some studies argued that advanced technology was available from European shipyards as they entered a declining period thus seeking another profitable source of ship equipment (Bae 2011; Eich-Born and Hassink 2005).[4]

Other studies have focused on the formation of a shipbuilding cluster in the southeastern part of the Korean Peninsula (Hassink and Shin 2005; Shin and Hassink 2011). Todd, on the contrary, argued that Asian shipyards sought economies of scale through large shipyards, not taking clusters into account, while the decline of European shipyards was related to the fault with the cluster (Todd 2011, 271).[5]

Many other factors may have also been related to the success of the Korean shipbuilding industry. For example, the repressive labor policy of the Korean Government made it possible for shipbuilders to maintain low labor costs for a long time before 1987 (Nam 2009, 205). The Korean shipyards' own R&D and technological innovation have also deserved attention (OECD 2015).[6]

Research on the success factors of the Korean shipbuilding industry is necessary and useful to understand the industry. Questions on success factors, however, seem to make it difficult to pay attention to continuities and changes in the industrial policy of the Korean government, and the dynamic relations between the government and the industry. This paper aims to focus on the continuities and changes in the industrial policy of the Korean government.

[4] Bruno and Tenold mentioned that the long crisis of the 1970s and early 1980s was even "a blessing in disguise for South Korea's shipbuilders" (Bruno and Tenold 2011, 217).

[5] The concept of a cluster may be used vaguely, and an evolutionary approach underlying the concept of a cluster's life cycle tends to underestimate historical contingencies, political aspects of industrial growth, and the role of the state as well.

[6] Lee and Park (2013) refer to five success factors of Korean Shipbuilding Companies such as the government's industrial policy, Chaebol-led industrial development, competition between Chaebols, domestic technology innovation, and human resource development. The Chaebol refers to a family-run conglomerate in Korean.

It has been nearly 50 years since Korea entered the global shipbuilding market. The Korean government's shipbuilding policy and relations with major shipbuilders have undergone huge changes along with the Korea's changing position in the market. Starting as late-comers, Korean shipbuilders have become leading actors, which was also accompanied by change in the firm's business strategy.[7] In the first decade of the 21th century the global shipbuilding market has enjoyed an unprecedented boom, and then went through a long-term recession following the global financial crisis of 2008.[8] Since 2010 Korea's shipbuilding industry has also undergone massive reductions in facilities and workforce as well.

The industrial policy of the developmental state has characteristics such as government control of foreign capital and bank sector, direct intervention and incubation of selected industries, authoritarian suppression of labor movement, and direct intervention in industrial restructuring. In comparison, the industrial policy of the neo-liberal state has other features such as capital and financial liberalization, general and indirect intervention in industries – for example R&D support -, emphasis on employment flexibility, and industrial restructuring based on so called market principles. The industrial policy of the Korean developmental state has evolved into a neo-liberal one since 1998. This article provides an overview of the Korean government's policy for the shipbuilding industry and the business strategy of the Hyundai Heavy Industries (hereafter, HHI), South Korea's leading shipyard.

Looking at the continuity and change of the Korean government's policy on the shipbuilding industry over the past 60 years, this paper reviews academic articles and books related to the Korean shipbuilding industry as well as materials published by shipbuilding companies, shipbuilders' association, and government ministries.[9] Korean shipbuilding statistics

[7] The classification of Cho and Porter (1986) on the competitive strategy of the shipbuilding industry has some limits to capture neo-liberalist trends of increasing mergers and acquisitions under financialization and globalized production system. Taking this into account, this article adopts the term of business strategy in a broad sense, rather than competitive strategy.

[8] The 2008 global financial crisis should be regarded as an incident that reveals an existing oversupply rather than a cause of the shipbuilding industry's downturn (Shin, 2016).

[9] As for official business histories for the Korean shipyards, refer to Korea Shipbuilding and Engineering Corporation (1969), Hyundai Heavy Industries Co.,

presented in this paper are based mainly on annual reports of Korea Offshore & Shipbuilding Association.

This paper is organized into four parts. The first section introduces and reviews the literature on the Korean shipbuilding industry. The second investigates will the historical transformations from the shipbuilding promotion policy of the developmental state into the neo-liberal restructuring policy dealing with the shipbuilding recession. The different effects and implications of above policies on labor relations will also be noted. The third section deals with the success of the HHI, and its major restructuring since 2014. The effects of the industrial policy of the Korean government are checked at the corporate level, and changes in the business strategy are discussed as well. The final section aims to summarize the discussions of section II, III, and to present some policy implications.

II. Trajectory of the Korean government's policy for the shipbuilding industry

Five periods can be distinguished in the Korean government's shipbuilding policy. The first period is characterized as import substitution (1953-1970). The support for export-led industrialization is a key feature of the second period (1971-1987). During the third period (1988-1997) the developmental state was weakened and liberalization and deregulation started. The fourth period is characterized by financialization and globalization under a neo-liberal transformation (1998-2008), and the fifth period by neo-liberal restructuring of the shipbuilding industry after the 2008 global financial crisis (2009-2018).

Import substitution policy (1953-1970)

In the 1950s, the Rhee Syng-Man government (1948-1960) implemented a planned shipbuilding project, supporting improvement of shipyard facilities, and promoting manpower training. Despite these efforts, however, the shipbuilding industry could not reach the output level of the end of the Japanese colonial period, and demand of domestic ships could not be satisfied. The Shipbuilding Promotion Act, promulgated on March

Ltd. (1992, 1998), Daewoo Shipbuilding & Marine Engineering Co., Ltd. (2004), Samsung Heavy Industries Co., Ltd. (2004).

11th, 1958, allowed subsidies for less than 40% of new vessel price, which was not carried out due to budgetary constraints. The Rhee government established the five-year shipbuilding plan (1957-1961) to build 153,000 tons of vessels for 5 years. From 1958 to 1961 the annual average shipbuilding completion was also only about 4,500 tons due to weak financial capacity (Korea Development Bank Research Department 1962).

On May 16, 1961 the Park Chung-Hee government (1961-1979) took power through a military coup d'état, and actively pursued to promote the shipbuilding industry through the first and second five-year economic development plans. The government planned to build 67,000 tons of vessels from 1962 to 1966, but the figure was only 20,000 tons until May 1965 (Park 2018, 23).

Under the second five-year economic development plan (1967-1971), the policy goal for the shipbuilding industry was to establish a self-sufficient base for domestic ships, and to gradually develop gradually an export industry. The Shipbuilding Industry Promotion Act, enacted on March 30th, 1967, has increased the fiscal funds loan ratio from 55% to 85% (HHI 1992, 315).

The funds received from Japan in the wake of the normalization of Korea-Japan diplomatic relations in 1965, were used to foster the shipbuilding industry. Using these funds the Korean Shipbuilding and Engineering Corporation (hereafter, KSEC)[10] pushed for expansion of facilities to build 10,000 tons of ships, and built 4,000 tons of cargo ships (Bae 2018, 85).

The shipbuilding industry showed stable growth rates in the 1960s. Total 4,636 gross tons of new vessels were completed in 1962, and 43,230 gross tons in 1971. The imports of foreign ships, however, increased more steeply, and the self-sufficiency of ships was only 18.2% in 1971. In the late 1960s the domestic demand for various fishing vessels increased, but the Korean shipbuilding industry could not respond to this.

[10] The KSEC was formed by Japanese capital in 1937 as Choseon Heavy Industries Inc. (CHI), to build and repair steel ships. After the defeat of Japan in the World War II, the CHI became a semi-state-owned enterprise and was renamed Korea Shipbuilding and Engineering Corporation in 1950. In 1968, the KSEC was privatized, retaining its name (KSEC 1969). In 1989, the Hanjin conglomerate took over the KSEC in bankruptcy, and set up Hanjin Heavy Industries. Until the huge Hyundai shipyard was established at Ulsan, the KSEC's Young-do shipyard was the largest in South Korea.

While domestic shipyards were idle, ships were imported from abroad (KIMA 1984, 1445).

In 1964 the KSEC built two 1,600-ton cargo ships adopting the block construction method.[11] The block construction method was an innovation which allowed a reduction of the workforce input, and the adoption of a flow work system suitable to Taylorist production management. For more improvements of production, however, it was necessary to increase capacities of docks and cranes, which were implemented only in the 1970s (KSEC 1969). The KSEC exported 20 tuna fishing vessels to Taiwan in 1969, showing the potential of the Korean shipbuilding industry to grow into an export industry. But these exports caused a deficit of 900 million Korean won due to low-priced orders, aggravating the management balance of the KSEC (Bae 2007, 39). In 1971 the KSEC received orders for six oil carriers ranging from 20,000 to 30,000 tons from the US Gulf. The Korean government has promised to increase the transportation costs of crude oil provided by the Gulf so that the company place orders for the KSEC (Bae 2018, 92).

Export-led industrialization (1971-1987)

With the establishment of Hyundai's Shipyard in Ulsan, Korea could only succeed in entering the global shipbuilding market of VLCCs. In the 1970s Korea's shipbuilding industry grew dramatically with the support of the government's promotion policy for heavy and chemical industry. The government's interest in the shipbuilding industry originated from political and military considerations, when, according to the Nixon Doctrine, U.S. military presence in Korea was expected to end. The Park military dictatorship attempted to foster a defense industry which was embodied in the 'four nuclear plant plans (Bae 2018, 90). The Hyundai Chaebol was in charge of the shipbuilding sector in those plans. Paying attention to the expanding oil tanker market, Chung Ju-Yung, the chairman of the Hyundai Conglomerate, actively pursued the construction of large shipyard. Since the Hyundai Shipyard started out as an exporter for

[11] The block construction method refers to a method in which a block is built at a factory or on the ground, transported to a fleet or dock, and then assembled to construct a ship. The size of a block is limited by the crane capacity which can lift it.

global market in 1973, Korea's shipbuilding records have been published in Lloyd's statistics.[12]

In March 1973, the Korean government announced 'the long-term shipbuilding industry promotion plan', according to which the Korean shipbuilding industry would meet domestic demand by 1980, and export 3.2 million tons of vessels. Another new shipbuilding industrial complex should be constructed at the Geoje Island. In October 1973, the KSEC started to construct the Okpo Shipyard in Geoje. The KSEC, however, could not afford the construction cost of the new shipyard, and went into bankruptcy. As a result, the uncompleted shipyard was taken over by the Daewoo Conglomerate, which completed the first dock of 1-million-ton class in 1981. The Jukdo shipyard built by the Korean Ocean Co., was also acquired by the Samsung Conglomerate. Samsung completed the first dock in 1979 and the second in 1983, and came to have an annual shipbuilding capacity of 450,000 gross tons (Korean Entrepreneurs' Association 1997).

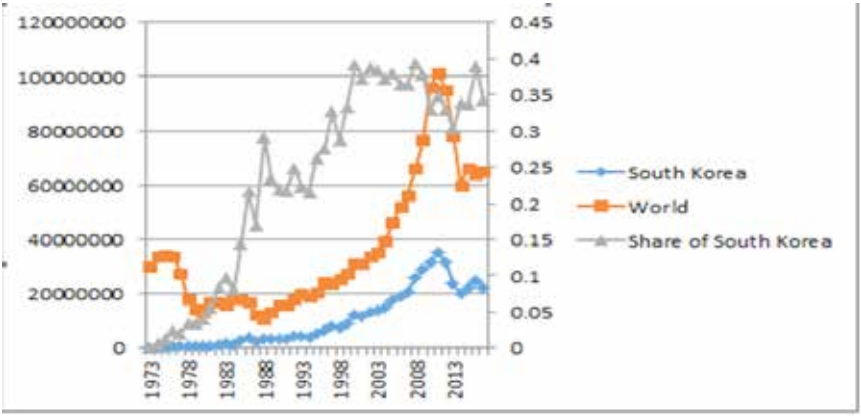
Korea accounted for 3.5% of the world's shipbuilding completion in 1980, and has almost always exceeded 20% since 1986 (see Figure 1). In particular, Koren rapid growth occurred at a time when world shipbuilding market was contracting seriously since the mid-1970s. The world's shipbuilding performance reached a peak of around 32.4 million gross tons in 1975, declining to 10 million gross tons in the 1980s. This meant that the growth of Korean shipbuilding industry was a disaster for European shipyards. On the other hand, Korea had to make it through with such a weak domestic market during severe recessions that the Korean government's proactive support greatly contributed to the survival and growth of the industry.[13]

Both the Park Chung-Hee and the Chun Doo-Hwan governments (1980~1987) supported shipbuilding industry through the "export fi-

[12] The growth strategy of the Korean shipbuilding industry contrasted sharply with Brazil, which aimed at the domestic ship market and focused on domestic capital. The Brazilian shipbuilding industry has virtually disappeared in the 1990s, but is seeking to revive again with Petro bras' oil field development (Dubois and Primo 2012).

[13] Bruno & Tenold argued that the long crisis of the 1970s and early 1980s was even "a blessing in disguise for South Korea's shipbuilders" (Bruno and Tenold 2011, 217). This argument is controversial, but clearly the severe recession has made the role of the Korean government even more important.

Figure 1
New Shipbuilding Completion (1973-2017)
(gross ton, ratio)



Source: Korea Offshore & Shipbuilding Association.

nance" and "planned shipbuilding program." Since the oil crisis of 1973, the payment method of ship exports has changed into "deferred payment basis." The Export-Import Bank of Korea was launched as a public corporation overseen by the government in 1976. In the 1970s and 1980s, financial support for ship export accounted for around 80% of total export financing for deferred payments (HHI 1992, 436). With the planned shipbuilding program, real buyers making orders at domestic shipyards were also provided government financial support. Total orders under the program amounted to 199,000 gross tons in 1977, and expanded to 820,100 in 1985, when the shipbuilding recession was most serious. Total orders under the program were over 4.64 million gross tons from 1976 to 1989 (HHI 1992, 462 Table 30).

Under the developmental dictatorship, partial liberalization and deregulation measures have already begun. In April 1979, the Economic Planning Board (EPB) announced a plan to change the government-led promotion policy for the heavy and chemical industry into a private-led initiative based on principles of a market economy (Cho 2016, 68). A group of economic officials who studied neoliberal doctrines in the United States were in the EPB. The new military led by Chun Doo-Hwan, which took office in May 1980 through cracking down the people's movement

for democratization in Kwangju, accepted the so-called economic liberalization measures and tried to refrain from government's direct intervention in the market. Although officially the government advocated a shift in industrial policy, Kim (1999) noted that planned shipbuilding program and export finance for deferred payments expanded in 1980s rather than in the 1970s. He argued that it was appropriate to view Korea in the 980s as a weakened developmental state in a transition period.

The Korean government's support for the shipbuilding industry at this time was indispensable for the survival and growth of Korean shipyards.[14] However, the Korean government's support was not more favorable to Korean shipyards than that of European governments to their shipyards. Interestingly, the World Bank (IBRD) changed its previous critical stance against Korea's heavy and chemical industrialization in this period. The HHI and the KSEC have reliably repaid interests on loans, and the Bank has come to regard South Korea as an important source of revenue. The IBRD also called for the Korean government's intervention and support to protect its own investment (Park 2015, 91).

The Korean developmental state repressed basic labor rights, and at the same time restricted the employers' right to dismiss workers at will. The Park government enacted the Emergency Act for National Security on December 27th, 1971 and imposed restrictions on the rights to bargain collectively and to go on strike. On December 5th, 1973, right after the oil shock, the government ordered emergency service for labor inspectors to prevent employers from dismissing workers due to reduction of factory operation. And in 1974 the labor department set up the guidelines for evading collective dismissals (Dong-A daily news July 18th, 1974).

In 1980 the new military led by Chun revised the Trade Union Act, making it a principle to unionize at enterprise level and forcing enterprise bargaining. The Act allowed collective bargaining crossing firms only when it was approved by the Government. But workers were not free to organize themselves into unions. Thus, except for the KSEC, until 1987 there were no unions at all at major shipyards such as Hyundai, Daewoo, and Samsung (Shin 2004).

[14] The Korean government pushed for the amalgamation of small and medium size shipyards. Since 1973, 18 shipyards have been merged by region. By the merger of several small shipyards, was established Daedong Shipbuilding, which was the predecessor of the STX shipbuilding

After the second oil shock in 1979, the global market's slow down led to a sharp decline in sea traffic in the early 1980s _ -2.9% in 1980, -4.0% in 1981, and -7.6% in 1982. (HHI 1992, 617-623). In 1985, new orders fell to 33.4% in tonnages and 25.2% in terms of total value.

Officially the government's regulation on collective dismissals continued. The ministry of labor sent a letter to the major associations of employers and managers, saying "even though facing redundancy situations, conglomerates should keep current level of employment through transferring workers to related companies, shortening working hours, using shift work, and also using statutory vacation and holidays." (Kyunghyang Daily News March 14th, 1983) The labor ministry demanded that, if they were to dismiss more than 10 workers, employers should get approval of regional labor administration offices. Moreover, the government also threatened to arrest employers who dismissed workers without thoughtful measures. But there were doubts about real effects of the seemingly strong regulations for preventing collective dismissals. A CEO of a manufacturing company in Busan openly said, "If workforce reduction is inevitable for managing the business, employers should have the right to dismiss workers." (Kyunghyang Daily News September 24th, 1983) The number of workers in the Korean shipbuilding industry continued to decrease from 75,643 in 1984 to 57,000 in 1987 and less than 50,000 in 1988. The HHI cut its workforce by 1,687 in 1985 and 5,588 in 1986 (HHI, 1992: 629).

Starting liberalization and deregulation, but incomplete - Industrial Development Act (1986) and "Directive of rationalization of the shipbuilding industry" (1989)

In a formal sense, the Industrial Development Act of 1986 abandoned the industrial policy of the developmental state. The Shipbuilding Promotion Act of 1967 was abolished, and the Industrial Development Act came into effect on July 1st, 1986. The new act avoided the government's direct support for selective industries as much as possible, and pursued functional and indirect supports for technology development and productivity improvement in general. The enactment of the Industrial Development Act itself, however, was led by government officials, especially by the Ministry of Commerce and Industry, which could still retain the authority to designate the rationalization industry according to

its judgment (Kim 2005). The new act can be understood as the result of a compromise of conflicting policy orientations between the EPB and the Ministry of Commerce and Industry (Cho 2016, 69). Thus the government's intervention continued, and a case in point was the "Directive of rationalization of the shipbuilding industry" of 1989 (HHI 1992, 216, 238-241).

Since 1987, the global shipbuilding market has gradually improved, but the Daewoo Shipbuilding and the KSEC faced bankruptcy in 1988 due to many factors such as operating losses, the heavy financial costs, and explosive labor disputes in 1987. South Korea's twelve major shipyards, including the Hyundai, the Daewoo, the Samsung and the KSEC, posted sustained losses due to the shipbuilding recession of the 1980s. The total deficit amounted to 49.1 billion won in 1985, 88 billion won in 1986, 272 billion won in 1988, and 248 billion won in 1989. High financial costs, which amounted to 9.8 percent of the total costs, were a big burden (HHI 1992, 215-216).

The bailout for the Daewoo Shipbuilding was a controversial issue. The Daewoo Shipbuilding completed the 1-million-ton capacity Okpo Shipyard in 1981. As the shipbuilding recession persisted, Daewoo continued to record deficits especially due to the burden of the construction costs. The deficit amounted to 600 billion won in the late 1980s (Cho 2016: 70).[15] Net losses reached 145.5 billion won in 1987 and 212.76 billion won inv1988,vand interest payments exceeded 437 billion won for the three years since 1986 (Kim 1999, 163).

In March 1989, the government announced a plan to rescue the Daewoo Shipbuilding. The Daewoo Group set aside 400 billion Korean won in self-rescue efforts, the state-run Korea Development Bank (KDB) suspend 250 billion won of its existing loans for seven years without interest, and offered 150 billion won in fresh loans. Subsequent measures for rationalization of the shipbuilding industry were implemented. Financial and tax supports were provided to the Incheon Shipbuilding and the KSEC as well. In particular, the Directive of 1989 limited the establishment of new shipbuilding facilities or the expansion of existing ones until 1993, and measures were taken to prevent excessive competition for low-cost

[15] The Daewoo conglomerate took over the suspended Okpo shipyard from the KSEC, demanding the government to contribute an equivalent amount of Daewoo's own investment (Kim, 1999: 161).

orders among Korean shipyards (HHI 1992, 216). The Korean government's intervention was based on the prediction that the recession would end soon.

The Directive of 1989 showed that the Korean government's financial support was indispensable for the industry to tide over the crisis, which was replicated on a larger scale in the subsequent crisis right after the global financial crisis of 2008. The government had the power to decide whether to back up a company's investment plan or not, and whether to keep a certain shipyard alive or not (Kim 1999, 154).

Until the end of 1985, the terms of loans for deferred payments offered by the Export-Import Bank of Korea were 9.6 percent annual interest rates, an 80 percent loan ratio, and an eight-year repayment period. This was adjusted to 80% of the loan ratio, 8.5 years between loans, and 8% of interest rates following the level of the OECD Memorandum of Understanding (HHI 1992, 641). At this time, various government subsidies were being implemented in Europe (Stopford and Barton 1986), and in financial terms Korea was at a disadvantage. In 1980, Korea's interest rate was around 8 percent, but Japan had 2-4 percent, Italy, Sweden and Spain 6-7 percent, and Korea had a shorter repayment period of eight years (Park 2018, 306).

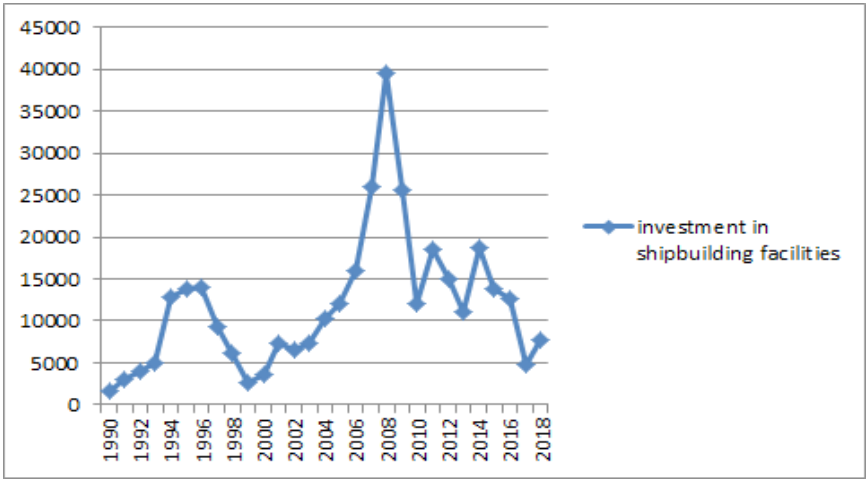
As soon as the Directive of 1989 was released, in 1994, Korean shipbuilders fiercely sought to construct new docks and expand those already in existence. The Samsung Heavy Industries expanded a second dock and built a third dock. The HHI completed the eighth and ninth docks, and the Halla Heavy Industries started building the Samho shipyard which began operations in 1995. As a result, Korea's new shipbuilding completion increased from 3.36 million tons in 1988, to 8.63 million tons in 1998, and its global market share reached 41% in 1999 (Figure 1).[16]

Total investments to the shipyard facilities increased from 166 billion won in 1990 to 1227.1 billion won in 1994, 1386.2 billion won in 1995, and 1397.4 billion won in 1996, respectively (Figure 2).

In the OECD multilateral shipbuilding negotiations of March 1994, the European Union (EU) and other countries urged the Korean government to curb the expansion of facilities, arguing that global oversupply would deepen due to the increase in the capacities of the Korean

[16] Compared to the increase in the new shipbuilding completion, the employment in the shipbuilding industry showed a slight increase. The workforce increased from 57148 persons in 1987 to 77799 persons in 1997.

Figure 2
Investment in shipbuilding facilities in Korea
10 mn. Korean Won



Source: Korea Development Bank.

shipyards.[17] The Korean government announced that it had a plan to curb overcapacities through administrative guidance. At the OECD shipbuilding conference in 1995, however, the Korean government argued that they could not regulate the expansion of shipyard facilities (Cho 2017, 427-8). Cho interpreted that the deregulation of the shipbuilding industry was promoted as a result of the strengthening of the voice of market-oriented bureaucrats in the Kim Young-Sam administration (1993-1998) (Cho 2017). In this case the government might interpret that noninterference would be more favorable to the Korean shipbuilding industry as a whole. In general, it seems that the Korean developmental state has weakened and been approaching toward neoliberal one from 1988 to 1997 (Ji 2011). In terms of the policy for shipbuilding industry, however, practices and heritages of the developmental state remained strong. One such example were the bailouts through direct government interventions in bankrupt shipyards such as the Daewoo shipbuilding.

[17] South Korea became a member of the OECD Working Party on Shipbuilding in October 1990, and signed a multilateral agreement in July 1994, which was to forbid the government subsidies to shipbuilders (Jonsson 1995, 62). As for the shipbuilding disputes between EU and Korea see Glen (2006).

From Asian financial crisis of 1997 to the global financial crisis of 2008

On January 1st, 1995 Korea became a full member of the World Trade Organization (WTO), thus making it difficult for the government to regulate foreign capital. Moreover, under the terms of the International Monetary Fund (IMF) bailout in 1997 financial crisis, the U.S. Treasury and Wall Street called for allowing foreign financial institutions to set up local subsidiaries, and being able to carry out mergers and acquisitions (Ji 2011, 239-240). Under the new Foreign Investment Promotion Act of November 17th, 1998, all types of foreign direct investment such as hostile mergers and acquisitions were permitted (Thurbon and Weiss 2006, 7). The Asian financial crisis also served as a turning point towards "the flexibility of labor market", which neo-liberal economic officials had already pursued in Korea. On January 13, 1998, at a meeting with the leader of the Federation of Forean Trade Unions, Michel Camdessus, the Managing Director of the IMF, emphasized the inevitability of collective dismissals in a competitive economic system. In February 1998, a new clause on dismissal for managerial reasons was implemented, thus prompting managers to carry out layoffs, and a series of severe labor disputes on collective dismissals happened in the Young-do shipyard of the Hanjin Heavy Industries (Shin, 2018).

During the boom of the 2000s, Korean major shipbuilders expanded their shipyard facilities in Korea, and at the same time aggressively increased overseas investments. Korean shipbuilders' domestic facility investment grew very sharply in the mid-2000s, exploding right before the financial crisis. It rose from 741.7 billion won in 2003 to 1.66 trillion won in 2006, and surged to 2.99 trillion won in 2007 and 3.6621 trillion won in 2008 (see Figure 2). In addition, South Korea's largest shipbuilding companies have accelerated their overseas expansion since the mid-2000s. According to the Export-Import Bank of Korea's Overseas Investment Statistics, the amount of overseas investments by South Korean shipbuilders exceeded $75 million in 2005, over $320 million in 2006, and $340 million in 2007, and finally hit a whopping $860 million in 2008.

The Korean major shipyards operated ship block plants overseas (in the case of Samsung and Daewoo), or acquired overseas shipyards (in the case of Daewoo's Mangalia shipyard in Romania and STX's acquisition of European shipyards). Moreover, STX and Hanjin built and operat-

Table 1
Overseas business investment by Korean shipbuilders

Company	Location	Yard location	Business domain	Beginning of operation	Status
Samsung	China	Ningbo	ship block	1997	operating
		Rongsheng	ship block	2007	operating
Daewoo	China	Shandong	ship block	2005	operating
	Romania	Mangalia	shipbuilding	1997	acquired by Damen shipyards group in 2017
Hyundai Mipo	Vietnam	Vinashin	ship repairing	1999	operating
Hanjin	Philippine	Subic	shipbuilding	2003	bankruptcy and on sale
STX	China	Dalian	shipbuilding	2007	shut down in 2013
	Finland	Turku	shipbuilding	2007	acquired by Meyer Werft in 2014
	France	St. Nazaire	shipbuilding	2007	acquired by Fincantery in 2017
	Vietnam	Vung Tau	shipbuilding	2011	acquired by Fincantery in 2017

Source: OECD 2015. p. 17 Table 6, and various articles of Korean newspapers.

ed their own shipyards at Subic in Philippines and at Dalian in China. In addition, targeting the marine structures related to the development of oil resources, Daewoo established a joint venture with Russia's Zvezda shipyard, and Samsung formed a joint partnership with a Brazilian shipyard. In the wake of the financial crisis, however, STX and Hanjin's overseas investment ended in a disastrous failure. Daewoo also had to dispose of the Mangalia shipyard (see Table 1).

China's economic growth was behind the global boom of shipping and shipbuilding in the 2000s. At the same time, deepening financialization and over-investment were accelerating the boom. Korea's shipping

and shipbuilding industries were also going through financialization. The so called ship investment company system was introduced in 2002 with the aim of boosting ship investment. The size of ship funds raised between 2004 and 2011 reached 6.9146 trillion won. STX shipbuilding was a good example attaining rapid growth riding on the trend of financialization. STX grew into a large conglomerate in a short period of time through corporate mergers and acquisitions before falling apart right after the global financial crisis. Expanding its business scope, STX actively utilized asset-backed securities, and initial public offerings (IPO) seeking capital gains. On the other hand, the Korean mid-sized shipyards, which entered the global market in the mid-2000s, got investments from overseas capital such as Goldman Sachs and Macquarie[18] as well as from private equity funds and secondary financial institutions in Korea (Shin 2016).

In the 2000s the focus of the Korean government's support for the shipbuilding industry has shifted to indirect support for research and development investment. In 2012, the OECD's Council Working Party on Shipbuilding launched a review project on government support measures for the shipbuilding industry. The review of Korea was submitted and discussed on November 25th, 2014 (OECD 2015). The OECD WP6 report assessed that the Korean shipbuilding industry's prominence in the high value-added sector has been supported by R&D spending and skilled labor. It pointed out that despite the 2008 economic crisis, large companies continued to invest in innovation, and new R&D facilities were under construction. On the other hand, it noted that the number of college-educated R&D and engineering workers among shipbuilding workforce was growing, and that shipbuilders were investing in training to strengthen workers' capabilities and their ties with universities. Even during the recession, the Korean government continued to provide support for the shipbuilding industry's R&D investment. The R&D investment by the big shipyards dropped dramatically in 2015 and 2016, when restructuring of big yards being carried out on a large scale. The South Korean government continues to invest in R&D unlike private conglomerates. A government-run Korea Research Institute of Ships and Ocean Engineering

[18] Goldman Sachs invested $50 million in the SPP shipbuilding, and used the put option to recoup all of its investment. Macquarie set up an investment company to become the second largest shareholder of the SLS shipyard.

(KRISO)'s investment in human resources has also not decreased.[19] The R&D investments through the Ministry of Trade, Industry and Energy and the Ministry of Maritime Affairs and Fisheries seem to be useful for the industry to maintain its competitiveness.

Global shipbuilding recession and restructuring of shipbuilding industry

The global shipbuilding recession following right after the global financial crisis of 2008, however, has forced the Korean government to take the lead in restructuring the Korean shipbuilding industry. The government's restructuring policy was determined through "the emergency meeting for economy" led by the President Lee Myung-Bak (2008-2013). The Lee administration pushed the closure of the small and medium-size shipyards based on "market principles".[20] In 2009, the government proposed a policy of "ongoing restructuring led by creditor financial institutions" with a focus on retrieving loans. Over twenty small and medium shipyards have been shut down or sold between 2009 and 2013 in Korea (OECD's Council Working Party on Shipbuilding 2015, 14 Table 3).

As for big shipyards, the government decided to provide financial support selectively through a profitability assessment, pushing for facility reduction in order to address oversupply in the shipbuilding industry. Korea's three shipbuilding giants pushed for expansion of the offshore plants sector in the face of the shipbuilding recession. Also the Lee Myung-Bak and the Park Geun-Hye governments (2013-2016) had actively encouraged Korean shipbuilders to expand the offshore plants sector as an alternative for shrinking shipbuilding. However, as orders for offshore plants have fallen sharply since 2014, extensive restructuring of large shipyards has also started. The Park administration called major shipyards to cut jobs of regular workers hired directly by 32 percent, from 62,000 to 42,000, and to reduce the shipbuilding docks by 23 percent from 31 to 24 between 2015 and 2018. In particular, in order to secure financial support from the government-controlled KDB, Daewoo Shipbuilding was forced to reduce

[19] As for detailed R&D statistics refer to annual reports of Korea Offshore & Shipbuilding Association.

[20] More than 20 small and medium-sized shipyards were shut down or sold between 2009 and 2013. As for details, see OECD (2015). p. 14, Table 3.

its shipbuilding capacity by 30 percent and the number of its direct workers by 41 percent to 5,500 by 2018.[21]

In general, labor unions in the shipyards seemed to fail to respond effectively to the government's financially-driven restructuring policy. Over tens of thousands of workers, including regular workers at small and middle shipyard, and internal subcontract workers at big yards, have lost their jobs and been driven to the streets. Regular workers at major shipyards could not but choose 'voluntary redundancy' and remaining workers were forced to accept wage cuts.

III. Emergence, growth, and restructuring of the HHI (1973-2018)

This section outlines the HHI's growth into the world's largest shipyard and the reorganization process since the 2008 global crisis.[22] The history of the HHI can be divided into four periods; emergence and survival (1974-1983); growth and expansion (1984-1997); upgrading under shipbuilding boom (1998-2008); and finally restructuring after the global financial crisis (2009-2018).[23] This section does not deal evenly with the whole period. Instead it focusses on the effects of the Korean government's policy to foster the industry, and also on the effects of the business strategy of the Hyundai on employment relations. Finally, it also notes the transformation of the ownership and governance structure of the HHI around a new holding company established in 2017.

Korean developmental state and emergence of the HHI (1974-1983)

The shipbuilding division at the Hyundai E&C was established in March 1970. Four years later, in November 1974, the HHI succeeded to deliver the VLCC No. 1, when the HHI entered the global ship export

[21] This description is based on press releases from Korean government ministries, including the Ministry of Trade, Industry and Energy.

[22] On December 28, 1973, the shipbuilding division of Hyundai Engineering & Construction became an independent corporation and was launched as the Hyundai Shipbuilding Heavy Industries Co., which was renamed Hyundai Heavy Industries Co. later. In this paper those names will not be distinguished, but labeled as HHI.

[23] HHI (1998) divided its history into establishment period (1974-78), take-off period (1979-83), growth period (1984-89), and maturity period (1990-97).

market. Official History of the HHI claimed that the Hyundai shipyard is a "business driven by the independent judgment of private companies", "proved the inefficiency of government intervention" and grew "out of thorough international competition based on market principles." (HHI 1992, 129-130). The chairman Chung also said that he had been considering entering the shipbuilding industry since around 1969, regardless of the government's recommendation. However, he did not think over shipbuilding, but only of constructing just ship blocks for shipyards overseas (HHI 1992, 90-99).

In June 1970, the Park administration drafted a plan for four major plants, including foundry, special steel, heavy machinery, and a shipyard. At first, Korea asked Japan for funding and technical support for the construction of the large shipyard in July 1970 (Bae 2007, 28). But Japan refused as a Japanese investigation team reported that establishing a 200,000 dead weight tons' class shipyard in Korea was unreasonable, and recommended that Korea should start from 20,000 dwt class vessels (HHI 1992, 318). Then, President Park put pressure on Hyundai to build a large shipyard (Park 2018, 46-49). Eventually Hyundai obtained loans from several banks of England, Spain, France, West Germany and Sweden. The first and most important creditor was Barclays Bank of England, and repayment of all the debts was guaranteed by the Korean government (Park 2016, 445; Kang et al. 2016, 85-88). For constructing the shipyard, the Korean government also invested $ 10 million, the same amount as Hyundai's (Kim 1999). In order to build a large shipyard and receive an order for a tanker from abroad, Korea desperately needed foreign capital, technology and reputation. Several European shipbuilding companies showed interest in the construction of the new yard as an opportunity to sell their shipbuilding technology and equipment. Proposals from s,everal firms, including West Germany's A. G. Weser and Denmark's Odense Shipyard were reviewed, but eventually A&P Appledore was selected as a partner. In September 1971, Hyundai signed an agency agreement with A&P Appledore[24] for technical support and to secure ship orders (HHI 1992, 326-327; Park 2016, 442; Park 2018, 59-60). Hyundai has agreed to pay A&P Appledore $ 176.4 million for ship design and technical support,

[24] A&P Appledore was a joint venture of two British shipbuilders - Austin & Pickersgill and Appledore Shipbuilders Ltd. -, which were actively seeking overseas business opportunities as a new profit source (Kang et al. 2016, 86).

and 0.5% of the new shipbuilding price in exchange for securing orders (HHI 1992, 326; Park 2018, 60-63).

The facilities and materials for the construction of the yard were procured through loans of more than $51 million from the UK, Spain, France, West Germany and Sweden.[25] These lending countries delivered welding machines, presses, cranes, and other equipment. Thus the initial financing was accomplished mainly through supplier credits (Kang et al. 2016, 94). Shipyard managers and engineers from Europe including Kurt J. W. Schou from Denmark-based Odense shipyard[26] were also HHI's consultants in its early days (HHI 1992, 344).

HHI learnt the construction technology for the shipyard from Japanese Kajima Construction and began sending shipbuilding technology trainees to the Kawasaki Heavy Industries in December 1972 (HHI 1992, 343). In 1973, the HHI signed a technical consulting contract with Kawasaki that included ship design drawings (Kang et al. 2015, 441). The production method of the Scott Lithgow was not applicable to Hyundai. The Scottish shipyard used 50-ton jib crane to build the VLCC on a sloping berth without a grave dock. Moreover, in Britain ship construction was carried out without production design and still in a craft system premised on the skilled craftsmen.[27] Thus HHI imported 'production design' from Kawasaki, and had to pledge that they would use Kawasaki products for major machinery and ship propellers in addition to paying consulting fees (Bae 2007). All ships from No. 3 to No. 9 were equipped with turbines manufactured by Kawasaki (HHI 1992, 373).

HHI completed the construction of its hull plant in March 1973, and operated its first goliath crane in September 1973. The completion ceremony of the Hyundai shipyard was held on June 28th, 1974, along

[25] See HHI (1992), p. 399, Table 23 for specific details of the shipyard's construction funds. This table is translated into English in Kang et al. (2015), p. 437. As for details of foreign loan, refer to HHI (1992), p. 399, Table 24.

[26] Until April 1976 Mr. Schou served as the first president for about three and a half years (HHI, 1992: 395). He was awarded a medal by the South Korean government in May 1976 for his contribution to the development of the Korean shipbuilding industry (Park 2018, 402). About 30 years later, a Korean former president of HHI acted as a consultant for the management at Odense Steel Shipyard in 2002 (Poulsen et al. 2018, 729). This episode symbolizes the dynamic change in the global shipbuilding industry in the late 20th century.

[27] See Kang et al. (2015, 2016) for the limitations of Scott Lithgow's production method of VLCC at this time.

with the christening ceremony for VLCC No. 1 and 2 (HHI 1992, 949).[28] The HHI delivered six VLCCs in 1976, which was far ahead of the performance of the major UK shipyards, such as Swan Hunter, Scott Lithgow and Harland & Wolf. The HHI proved that it learned a lot quickly from its initial trial and error (Kang et al. 2015, 451-453).[29] Behind the HHI's early success in learning shipbuilding technology and building ships, was the presence of abundant Korean engineers graduated from college.

Since 1976, the pre-fitting technique of Kawasaki shipyard has been introduced, and equipment were installed during the assembly of large hull. However, by 1979, the portion of pre-fitting was only 35%, and by 1989 it had steadily improved since the 1980s, with the portion reaching 75% (HHI 1992, 816-817).

Under the developmental dictatorship, workers could not organize themselves at the Hyundai shipyard until 1987, and even the joint labor-management council did not exist. The internal subcontracting arrangements in the *Hyundai* shipyard evolved under these political conditions. Then, the shipbuilding workers' riots in September 1974 demanding the abolition of the subcontracting arrangements occurred under the despotic labor control practices of the shipyard. Due to the severe labor shortages at the early stages of the shipyard, the Hyundai management had promised incoming workers that they would be treated as direct hired regular workers. The management's breach of the promise triggered workers' outrage. On September 19th, 1974, some 300 workers in the hull shop took actions first, demanding the abolition of the delegate control system. Soon about 3,000 workers went through the police line and burnt the flag of the HHI at the main gate and destroyed the windows and furniture of the main office building. Raging workers threw stones to the CEO, Chung

[28] The simultaneous push for shipyard construction and shipbuilding could have increased the utility of investment, but this resulted in numerous industrial accidents, which left many workers dead or injured. According to the official history of HHI, more than 3,000 industrial accidents have occurred, and about 60 people have died until March 1973 when a new safety management department was established. However, in 1974, there were 22 deaths from industrial accidents, 1,156 seriously injured and 1,536 minor injuries. The official history states that industrial accidents have decreased since 1978, but 12 people died in 1978, 17 in 1979 and 17 in 1980 in the shipyard (HHI 1992, 364).

[29] After the christening ceremony for VLCC Lines 1 and 2 ended in June 1974, even a large block unassembled remained in the yard (HHI, 1992: 355-358).

Ju-Yung, who had avowed to insist on the original delegate control system (Kim 2006). The military police cracked down on the riots and arrested 877 workers, and imprisoned 20 of them. Eventually management completed the system in the whole shipyard in the late October 1974, when regular workers totaled 3,929 and internal subcontract workers, 10,852 respectively. Since then the proportion of internal subcontract workers in production workforces always exceeded over 60% until the late 1970s (Shin, 2003).

HHI was awarded orders for 12 VLCCs, totaling 3 million dwt until March 1974 (HHI 1992, 337). Between early 1967 and early 1974, total value of tanker orders worldwide increased almost eight times, from 25 million dwt to 196 million dwt (Kang et al. 2015, 431). The overheating of the market was a favorable condition for HHI to enter it. However, a severe depression started off right after the first oil shock and HHI failed to win any orders for VLCCs for next 12 years. In addition some ship owners have refused to take over three tankers.[30] Hyundai conglomerate set up Hyundai Merchant Marine Co. to buy the above three tankers (HHI 1992, 380-381), and the Korean government asked the U.S. Gulf to entrust them half of oil shipping for South Korea to HMM. In addition, since 1975 the Korean government implemented a planned shipbuilding program to provide the company with loans covering up to 90 percent of the shipbuilding costs at very low interest rates.

Among the planned shipbuilding program orders from 1976 to 1980, Hyundai had 557,440 GT, which amounted to the 67.2 percent of the total (HHI 1992, 463 Table 32). Orders won through the program accounted for about 15 percent of HHI's new orders, and helped the yard to tide over the severe depression. Since 1972, the government has expanded export financing for deferred payments, which had no advantage over European shipyards, but was a must-have system (HHI 1992, 391-392). With the establishment of the Export-Import Bank of Korea in 1976, the annual amount of export financing was increased every year to reach 1124.2 billion won in 1984 (HHI 1992, 462-463).

In 1974 and 1975, HHI tried to overcome the recessions by changing its products strategy, receiving orders for multi-purpose cargo carriers, bulk carriers and roll-on/roll-off ships (Kang et al. 2016, 99-100; HHI

[30] By Jun 1975 cancellations worldwide totaled 115 vessels of about 28 million dwt (Kang et al. 2015: 443 n. 71).

1992, 384-386, 450-458).[31] Financial costs, however, have become a big burden, as in 174 and 1975 interest rate cost rose from 2 billion won to 10 billion won (HHI 1992, 400-401).

Hyundai Chaebol's entry into the rising Middle East construction market with abundant oil dollars was instrumental to overcome the crisis. Hyundai won an order to build an ASRY (Arab Shipbuilding & Repair Yard) in Bahrain and also an order to expand a naval base in Saudi Arabia at the end of 1975 (HHI 1992, 428). In 1976, Hyundai succeeded in winning an order for the $931 million project of constructing Jubail industrial harbor and offshore structures (HHI 1998, 65). Profits accruing from sales of steel structures' sales for the Jubail harbor contributed greatly to the improvement of balance sheets. The HHI posted a net profit of 141.7 billion won in 1977 and 86.8 billion won in 1978 (HHI 1992, 484-487, 592).[32]

Growth and expansion (1984-1997)

The Chun Doo-Hwan government took over power through military coup' de eta in May 1980. The new government violently carried out a so called investment adjustment in the heavy and chemical industries, which did not have a significant impact on the Korean shipbuilding industry. When the government implemented the floating exchange rate system in 1980, the won exchange rate against the U.S. dollar fell from 484 won in 1979 to 748.80 won in 1982. This exchange rate fall improved HHI's management. In 1983, it won orders for 66 vessels of 2.075 million tons, accounting for 10.6 percent of new worldwide orders (HHI 1992, 546-547) 1985 was the worst year of the shipbuilding recession. HHI therefore tried to diversify its business into non-shipbuilding sectors such as plant manufacturing, engines, robots, heavy machinery, and steel structures

[31] In August 1979, the HHI first began to build a Korean-type destroyer (HHI, 1992: 664).

[32] Todd noted the advantages of South Korea's Chaebol, the conglomerates operating shipyards which, unlike family-owned British shipyards, actively pursued growth and innovation (Todd, 2011: 266 n. 23). It is true that Korea's Chaebol have made large-scale investments possible and contributed to overcoming the recession through business diversification. The Odense shipyard was also owned by Møller family and could survive longer than other European shipyards because of "the strong position of the expanding and diversified conglomerate of Maersk." (Poulsen et al., 2018: 721, 725).

(Kim 1999, 265; HHI 1992, 617). The shipbuilding business accounted for about 55 percent of the HHI`s total sales at the end of 1986. The figure, however, was much higher than the 9.4 percent for the Mitsubishi Heavy Industries of Japan (HHI 1992, 665).

The HHI has built 131 bulk carriers of 4.44 million tons, 29 Crude Oil Carriers of 2.18 million tons, and 46 multipurpose carriers of 0.88 million tons during the first 12 years. Classifying by shipping company, the Hyundai Merchant Marine (HMM) accounted for the largest share, 36 ships with 1.43 million tons, followed by Kuwait's UASC Corp. with 37 ships and 750,000 tons (HHI 1992, 689). Although apparently HHI has grown through an export-oriented strategy, the HMM owned by Hyundai Chaebol made an important contribution which allowed HHI to overcome the long recession since 1974.

HHI established a block assembly system from the early days of the shipyard. The HHI has applied optical tracking and numerical contr (HHI 1992, 805-806). Various design drawings were imported from Europe and Japan (Park, 2018: 415). In 1975 the Viking System developed in Sweden was introduced for photo marking and cutting, and in 1981 Autokon System was imported from Norway (HHI 1992, 813-814). Welding automation has been expanded from plane work to curved work and from in-plant work to outside work (Hong 1982). HHI still purchased many technologies from foreign countries in the 1980s, but has also established its own research institute, the Hyundai welding technology research institute in November 1983. In October 1984, HHI completed its own ship ocean research and development institute (HHI 1992, 649-654).

Hyundai Heavy Industries introduced the Moss-type LNG carrier technology from Norway to build the first LNG carrier in 1991 (HHI 1992, 819), and delivered its first LNG carrier in June 1994. HHI completed the 8th and 9th dock in November 1995, and expanded its automated facilities. In the 1990s, HHI' share of the global new shipbuilding market rose steadily from 11.3% in 1990 to 14.0% in 2000.

In the Hyundai shipyard, workers again challenged the internal subcontracting arrangements through the 1987 Great Workers' Struggle, as the general strikes and sit-downs across the South Korea during the summer of 1987 came to be known. Following the retreat of the military government forced by the massive demonstrations demanding democracy across the country in June 1987, the workers' strikes and sit-ins burst out almost all over the large factories and shipyards, and their main demands

were wage increases and union recognition. In the Hyundai shipyard workers continued the strike, sit-downs and street demonstrations for 56 days from July 28 to September 21 of 1987. Besides the demands for wage increases, recognition of the new democratic workers' union, and the abolition of control for workers' hair, the workers asked that the subcontract workers should be directly hired by the Hyundai shipyard. Finally in 1988 management and the HHI workers union concluded the special agreement for the transfer of the subcontract workers and the previous internal subcontracting companies were almost eliminated and disappeared from the shipyard in 1989 (Shin, 2003).

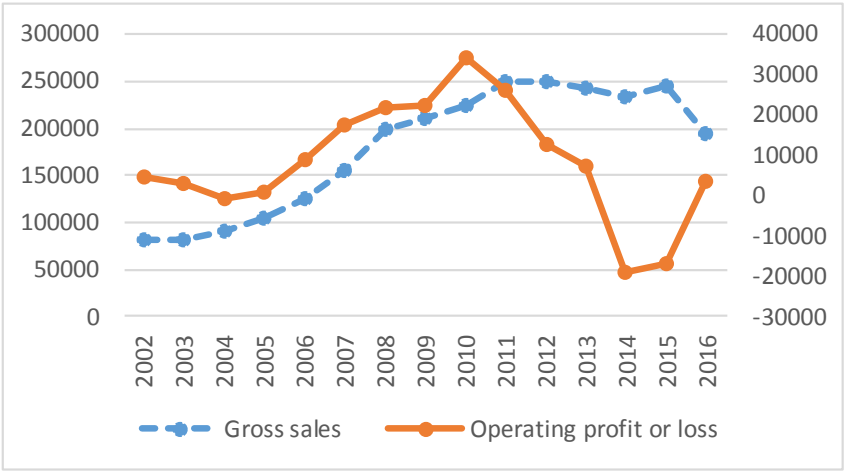
The enterprise level union was organized in the Hyundai shipyard through the 1987 Great Workers' Struggle and became a main actor in labor management relations at the yard (Shin 2004). Since 1987 labor disputes over the shop floor control continued and as working conditions improved sharply the turnover rate of the regular workers declined almost to zero. Faced with these new conditions, management stopped hiring new regular workers and began to increase the subcontracting work with a view to securing numerical labor flexibilities and preventing the growth of union organization. In the Hyundai shipyard 1,881 subcontract workers were already employed by 339 subcontracting companies by 19 January 1991. The proportion of the subcontract workers in relation to the total production workforce in the Hyundai Shipyard continued to increase every year from 8.6% in 1991 to 31.7% in 1996, and even to 50.5% in 2000 (Shin, 2003).

Upgrading under shipbuilding boom (1998-2008)

The Korean economy was suffering from the 1997 financial crisis, but HHI rather took advantage of the yen's fall. It set its 1998 order target at $9.3 billion, which was a 29 percent increase in relation to 1997, and its total sales at 6.5 trillion won, which would be a 14.6 percent. The Chairman, Chung Ju-yung, officially resigned in May 2000, and HHI was separated from Hyundai Group in 2001. Chung Mong-joon, the sixth son of the Chung Ju-yung inherited HHI. He had already been inaugurated as CEO of the HHI at the age of 31 in 1982.

HHI changed its Mipo Dockyard Co. into new shipyard in 1996, and the Hyundai-Mipo emerged as a strong player in the mid-sized shipbuilding market. In 2002, HHI acquired bankrupt Halla Heavy Industries and operated as Hyundai Samho Shipyard.

Figure 3
Business Performance of the HHI
100 million Korean Won

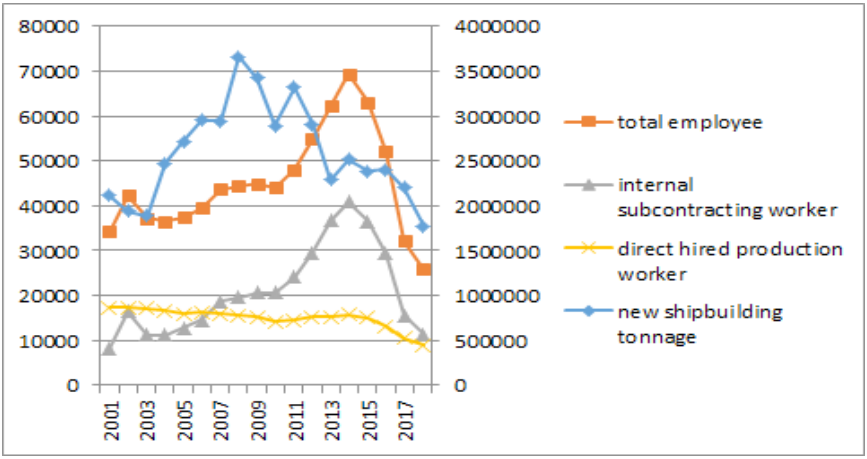


Source: HHI Trade Union (2016).

In terms of orders by shipyard just before the global financial crisis, HHI secured 361 ships, 13.8 million CGTs; Hyundai Mipo, 264 ships, 10.5 million CGTs; and Hyundai Samho, 133 ships and 5.1 million CGTs. Each company ranked first, fourth and fifth in the world respectively. HHI had secured enough orders, largely of high value added ships such as containers, LNG carriers and tankers, by 2012 (Clarkson, Shipyard Orderbook Monitor October 2008).

During the shipbuilding boom of the 2000s, HHI continued to grow rapidly. Between 2002 and 2008 total sales rose from 8.1341 trillion won to 19.9571 trillion. Operating profits also rose, from to 2.262 trillion won to 454.5 billion over the same period (Figure 3). Due to the shipbuilding boom, HHI's overall employment rose from 34205 in 2002 to 44390 in 2008. But during the same period the actual number of direct hired production workers declined from 17,317 to 15,560. The number of internal subcontract workers increased from 16433 to 19616, in order to respond to the increased work load (Figure 4).

Figure 4
Employment and new shipbuilding completion in HHI
(2001-2018)
(person, CGT)



Source: Korea Offshore & Shipbuilding Association.

Global shipbuilding recession and restructuring politics

HHI's new shipbuilding completion increased from 2.118 million CGT in 2001 to 3.663 million in 2008 before plunging into 1.774 million in 2018. HHI expanded its offshore plant business as a way to overcome the shipbuilding recession. Total sales of offshore plant projects more than tripled between 2008 and 2014, but HHI lacked offshore plant design technologies, and the self-sufficiency rate of equipment and materials did not exceed 20 percent (Park 2019). Losses from offshore plants business caused HHI massive operating losses in 2014 and 2015 (Figure 3).

The HHI's total number of employees fell from 69,356 in 2014 to 25,952 in 2018, a trend which also reflects the impact of the spin-offs in 2015. It is noteworthy that the main targets of mass layoffs were internal subcontract workers, whom HHI had increased during the super boom, and during 2009-2014 in order to increase offshore plant construction (Figure 4).

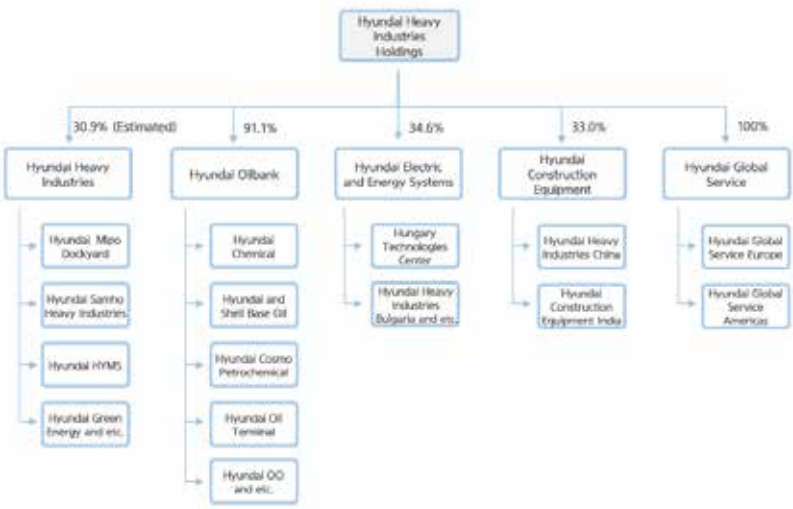
Internal subcontract workers jumped to 40,836 in 2014, but in five years dropped into 11,411 due to full-fledged workforce reductions (Figure 4). This indicates that the main victim of the last shipbuilding recession was internal subcontract workers. The labor union of the shipyard, mainly composed of direct hired production workers, was unable to effectively resist mass layoffs of internal subcontract workers led by the management. On the other hand, some direct hired workers were forced to choose a so called 'voluntary redundancy' program. As mentioned in section II, the government's restructuring policy also played an important role in weakening the resistance of workers against the above job cuts.

The ownership and governance structure of HHI has changed into a financial-capital-friendly form. The HHI was reorganized into a holding company system, which sought to further strengthen the Chung family's control over the HHI Group. In April 2017, Hyundai Electric and Energy System, Hyundai Construction Equipment and Hyundai Robotics were spun off from HHI. On March 30, 2018, Hyundai Robotics changed its name to HHI Holding Co.

The merger of HHI and Daewoo Shipbuilding is now under way as part of the privatization of Daewoo Shipbuilding owned by the KDB. A new interim holding company called Korea Shipbuilding & Marine Engineering Co., which would be owned by HHI Holding Co. and KDB together, is currently being pushed forward. HHI is under control of Hyundai Heavy Industries Holdings, which also own Hyundai Oilbank, Hyundai Electric and Energy Systems, Hyundai Construction Equipment, and Hyundai Global Service since 2017 (Figure 5). The newly established interim holding company would control HHI, Hyundai Samho, Hyundai Mipo, and Daewoo Shipbuilding as subsidiaries all together.

In sum, the emergence and growth of HHI was the result of a joint venture between the state and Hyundai Chaebol. During the early days of the shipyard the Korean developmental state helped HHI attract capital and technology from abroad. During the recessions following after the first oil shock, the developmental state made up for the shortfall of new shipbuilding demands through planned shipbuilding. The Hyundai Conglomerate was able to set up a shipping company on its own, and also reduce risks in the shipbuilding industry through business diversification. In the last shipbuilding crisis due to the global financial crisis of 2008, the government managed to force HHI to downsize facilities and reduce manpower through financial control. The privatization of Daewoo

Figure 5
HHI Group after Business Restructuring



Source: Hyundai Heavy Industries Group (2018). Corporate Governance Reform & Dividend Policy.

Shipbuilding into the HHI group – even though the KDB holds a stake in the new holding company – would mean that the last legacy of the developmental state would disappear. In addition, it means that Chung family's ownership and control over the Korean shipbuilding industry will be strengthened and more sophisticated.[33] However, it is questionable whether corporate governance based on family ownership is still suitable for this larger globalized business.

IV. Concluding remarks

Numerous legends and heroic stories have been created against the backdrop of the success story of the Korean shipbuilding industry. On the one hand, they advocate the developmental dictatorship, highlighting the positive role of Park Chung-Hee and the government. Others have em-

[33] Chung Mong-joon is the largest shareholder of the HHI, and his son, Chung Ki-sun is in charge of management as vice president of the HHI.

phasized the role of Chaebol owners or entrepreneurs from a market-oriented perspective. Strangely enough, both views are often combined at the same time. This paper has gone beyond the discussion of success factors to examine how the relationship between the government and the market has changed and the difficulties and problems that shipyard workers had to face in the process. In particular, the paper has focused on the government's policy for the shipbuilding crisis.

Under the military dictatorships the government helped the shipbuilding industry to secure international competitiveness through export finance, the creation of demand through planned shipbuilding, and the suppression of the labor movement and their protests. When a shipyard went to into bankruptcy due to a prolonged recession, the government revived it through massive financial aid. Those policies showed the typical characteristics of industrial policies of the developmental states. The Korean government's industrial policy shifted significantly towards neo-liberalism in 1997. Instead of the preference for foreign loans over foreign direct investment under the developmental period, the Korean government allowed all types of inward and outward capital flows since 1998. As the Korean big shipyards are strongly competitive, the government promoted the liberalization of investment and financialization, which has acted as a factor inducing over-investment in the industry during the 2000s (Shin 2016).

Under the shipbuilding recession after the global financial crisis of 2008, the Korean government pushed for financial-led restructuring. Government officials emphasized market principles, which in fact placed the interests of creditors and shareholders at the top of all priorities (Ji 2011). As for the restructuring of the shipbuilding industry, shipyard unions were not invited to the table for consultation at all. The government and creditors asked unions to sign a workforce reduction agreement in exchange for financial assistance.

Direct hired regular workers at large shipyards, organized by means of labor unions, managed to minimize job cuts and secure some compensation for voluntary redundancy, But internal subcontract workers have suffered massive layoffs without any compensation. This division of workers is still a major impediment for the prospects of the workers' movement in the shipyard.

Korea`s shipbuilding industry is highly exposed to the risks of fluctuations in the world economy. Since the 2000s instability in the new

shipbuilding market has increased, and there have been weaker employment protection measures, as neoliberal policy and discourse spread in South Korea. The social pains and inefficiency caused by the restructuring of the shipbuilding industries over the past decade were neither inevitable nor fair. The design of socially responsible restructuring policies and institutions also remains a challenge for the Korean labour movement. Furthermore, shipyard workers' union cannot but think over policies and institutions for regulating speculative investment in the shipping and shipbuilding industries. The principle of industrial democracy, which makes it possible for labor unions to participate in the government's policymaking process, would be of prime importance for the all shipyard workers, including internal subcontract workers.

Incorporating Daewoo Shipbuilding under a new holding company and putting HHI under the control of multi-tier holding company will be another hurdle for the expansion of industrial democracy in the Korean shipbuilding industry. Sustainable corporate governance would be an essential condition for large global companies and the government's industrial policy should also support it.

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Varela, Raquel, Hugh Murphy y Marcel Van der Linden, eds., 2017. *Shipbuilding and Ship Repair Workers around the World. Case Studies (1950-2010).* Amsterdam: Amsterdam University Press/Chicago University Press, 742 p.

Hablar de la historia de un sector de actividad y de su colectivo de trabajadores alrededor del mundo plantea, como mínimo, pretensiosos desafíos. Sin embargo cuando nos referimos a una industria como la de la construcción y reparación naval, que opera en una escala internacional, involucrando su cadena de valor entre distintos países y estando íntimamente sujeta a los vaivenes de la economía y el transporte mundial, la perspectiva global deja de ser un capricho teórico para plantear su pertinencia heurística.

La historia global se inscribe dentro de las actuales reflexiones historiográficas sobre la globalización, imbricando lo global con lo local y adoptando una metodología que completa y desafía otras maneras de hacer historia. Desde esta perspectiva, el *International Institute of Social History* (IISH) de Amsterdam intentó reformular desde los años 80 la historia del trabajo frente a la emergencia de las teorías sobre el fin de la historia, y el desdén de los análisis centrados en la clase obrera como sujeto histórico privilegiado. Como un contrapunto a esta visión, se plantea el abordaje de la "historia global del trabajo"[1] que procura promover el diálogo entre las investigaciones del Norte y el Sur, rechazando una visión nacionalista y otorgando una mirada comparativa sobre la clase trabajadora. La historia global del trabajo ha realizado importantes contribuciones metodológicas a través de un abordaje multifocal basado en un amplio trabajo empírico y una comprensión holística de la historia de los trabajadores[2].

[1] Marcel Van der Linden y Jan Lucassen, *Prolegomena for a Global Labour History* (Amsterdam: International Institute of Social History, 1999).

[2] Véanse las investigaciones precedentes del IISH sobre historia global de los trabajadores textiles y portuarios: Sam Davies et al, eds., *Dock Workers: International Explorations in Comparative Labour History, 1790-1970*, 2 vols. (Amsterdam: International Institute of Social History, 2000). Lex Heerma van Voss, Hels

El libro aquí reseñado se propone emplear este abordaje a la historia de la construcción y reparación naval y de sus trabajadores desde mediados del siglo XX hasta el 2010, reconstruyendo los procesos productivos, las cadenas globales de valor y la historia las luchas de sus trabajadores. En *Shipbuilding and Ship Repair Workers around the World. Case Studies (1950-2010),* los editores llevan a cabo un trabajo exhaustivo donde reúnen y articulan 32 investigaciones que describen la situación de la construcción y reparación naval en 24 países a partir del análisis de caso de 19 astilleros.

Asumiendo que la valorización del capital se produce a escala global, ya que los procesos de producción de mercancías crecientemente se deslocalizan y fragmentan en el territorio mundial, el caso de la construcción naval pesada constituye un ejemplo paradigmático que ilustra este proceso. Desde la extracción de metales de las minas hasta la instalación de la mampostería interior de los camarotes, muchos son los eslabones que componen la cadena de producción de un buque de gran porte. Cada una de estas etapas productivas, a su vez, implica procesos y modelos de organización del trabajo diferentes que ponen en movimiento los instrumentos materiales y financieros del capital pero, por sobre todo, la fuerza de trabajo que le da valor a los bienes y servicios producidos.

Actualmente un buque de carga podría ser construido en China o Corea del Sur, con el acero proveniente de las minas de España, utilizando motores finlandeses, siendo pintado con solventes alemanes y haber sido diseñado en universidades norteamericanas por profesionales, altamente calificados proveniente, por ejemplo, de la India. La construcción naval revela, así, una división internacional del trabajo que desagrega y desterritorializa procesos de producción complejos y de alto valor agregado. Es una industria globalizada, y por esta razón su estudio contribuye a la comprensión de fenómenos complejos.

Hiemstra-Kuperus y Elise van Nederveen Meerkerk, eds., *The Ashgate Companion to the History of Textile Workers, 1650-2000* (Amsterdam: International Institute of Social History, 2010).

En esta sintonía la obra, de acceso gratuito[3], presenta variados resultados empíricos sobre la industria de construcción y reparación naval en al menos dos niveles de análisis: las estrategias productivas desplegadas por el capitalismo en las últimas décadas (deslocalización, subcontratación, flexibilización) y las consecuencias sobre los trabajadores y sus organizaciones. Así, cada capítulo, con diferente énfasis y profundidad según sea el foco de interés de cada autor, releva y desarrolla algunos rasgos históricos y actuales de la construcción naval en cada país, de los astilleros seleccionados y de sus trabajadores.

Entre los diferentes ejes abordados se destacan, en relación al nivel macro, la reconstrucción de las cadenas globales de valor, los cambios en los procesos de producción y la organización del trabajo y las políticas públicas que intervienen en el sector. En el nivel micro, los estudios de caso, las relaciones y condiciones de trabajo, la composición y formación de la fuerza de trabajo, las culturas laborales, la organización gremial, y las huelgas, protestas y conflictos laborales.

Los diversos capítulos que conforman el libro están ordenados por regiones continentales y se estructuran en torno a los astilleros más emblemáticos y/o representativos de cada país. La estrategia de estudios de caso adquiere un sentido fundamental para el proyecto global, en tanto expresa en lo *micro* las *macro* tendencias económicas, productivas y organizacionales que experimentó la construcción naval mundial en los últimos 70 años. Así, la reconversión productiva, la relocalización de empresas hacia países asiáticos, las políticas de ajuste (prejubilaciones y despidos masivos), la flexibilidad laboral y las estrategias de subcontratación dejan de ser conceptos abstractos para tomar cuerpo en hombres, mujeres, espacios y ciudades concretas. De esta reconstrucción global emer-

[3] Varela, Raquel, Hugh Murphy y Marcel Van der Linden, eds. 2017. *Shipbuilding and Ship Repair Workers around the World. Case Studies (1950-2010)*. Amsterdam: Amsterdam University Press/Chicago University Press. http://oapen.org/search?identifier=625526;keyword=shipbuilding.

ge un orden invisible que, en la reconfiguración de la producción, conecta y articula a lugares tan diversos como Rio de Janeiro, Busan o Génova.

Las fuentes de investigación privilegiadas en esta compilación se componen de registros estadísticos del sector; informes de los principales sindicatos; archivos y registros de los astilleros; legislación y documentos nacionales e internacionales relativos al desarrollo y regulación del sector; artículos de prensa local y nacional; testimonios de entrevistas a diversos actores y resultados de encuestas.

A lo largo de sus más de 700 páginas, la edición plantea un acabado diagnóstico del sector en las distintas regiones señalando algunas convergencias existentes a escala global. Entre estos rasgos es relevante destacar la creciente especialización de los principales países productores en distintos eslabones de la cadena de valor del sector y/o en los tipos de buques producidos; la rápida y dominante difusión de las tecnologías de automatización y los nuevos modos de construcción por ensamblado de bloques que han modificado por completo los saberes y calificaciones requeridos en el sector así como el número de trabajadores de oficio empleados en la industria; la intensa competencia existente entre las naciones (sobre todo China, Corea del Sur y Japón) por ganar porciones del mercado global y la puesta en marcha de estrategias de reducción de costos (sobre todo laborales) con el consecuente impacto en términos de deterioro de las condiciones de trabajo; y la extensión de la subcontratación y precarización como modalidades hegemónicas de contratación, tanto en países de "reciente" industrialización, como China o India, o en países "desarrollados" como Japón, que se ven reforzadas por la contratación de trabajadores migrantes no sindicalizados.

Lo que se concluye provisoriamente en el libro es que si bien la evolución reciente de la construcción naval debe comprenderse a escala global debido a los ciclos económicos, la movilidad del capital y las reestructuraciones sufridas por el sector, las condiciones de vida y trabajo de sus obreros continúan experimentando grandes desigualdades entre los países de Oriente y Occidente y entre el

Norte y el Sur. La globalización del sector también se expresa en desiguales accesos de los trabajadores, al Derecho del Trabajo, los sistemas de previsión social y la estabilidad en el empleo.

El desafío que deja planteado el libro es avanzar, entonces, hacia una perspectiva comparativa entre los casos que pueda ahondar, a partir de tópicos transversales, en el análisis de las similitudes y diferencias presentes en la evolución reciente del sector a nivel global y, sobretodo, en la reconstrucción de las estrategias de negociación y/o resistencia de sus trabajadores.

Juliana Frassa
Universidad Nacional de la Plata / Universidad Nacional Arturo Jaurteche

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Dos autores

León, Orfelio G. e Ignacio Montero. 1993. *Diseño de investigaciones: Introducción a la lógica de la investigación en psicología y educación*. Madrid: McGraw-Hill/Interamericana de España.

(León y Montero 1993, 25)

Tres autores

Borrego Nieto, Julio, José J. Gómez Asencio y Emilio Prieto de los Mozos. 1986. *El subjuntivo: valores y usos.* Madrid: SGEL.

(Borrego Nieto, Gómez Asencio y Prieto de los Mozos 1986)

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(Notario Ruiz 2005, 24)

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(Fernández Ramírez 1985, 112-23)

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(Gómez Mendoza 2009)

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Kurland, Philip B., y Ralph Lerner, eds. 1987. *The Founders' Constitution*. Chicago: University of Chicago Press. Acceso el 28 de febrero de 2010. http://press-pubs.uchicago.edu/founders/.

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Feliu Albadalejo, Ángeles. 2011. «La publicidad institucional en la arena parlamentaria española». *Revista Latina de Comunicación Social* 66: 454-481. Acceso el 2 de febrero de 2015. http://www.revistalatinacs.org/11/art/941_Alicante/20_Feliu.html.

(Feliu Albadalejo 2011, 470)

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Stolberg, Sheryl Gay, y Robert Pear. 2010. «Wary Centrists Posing Challenge in Health Care Vote». *New York Times*, 27 de febrero. Acceso el 28 de febrero de 2010. http://www.nytimes.com/2010/02/28/us/politics/28health.html

(Stolberg y Pear 2010)

4. Reseña del libro

Kamp, David. 2006. «Deconstructing Dinner». Reseña de *The Omnivore's Dilemma: A Natural History of Four Meals*, de Michael Pollan. *New York Times*, 23 de abril, Sunday Book Review. http://www.nytimes.com/2006/04/23/books/review/23kamp.html

(Kamp 2006)

5. Tesis o tesina

Hernández Rubio, Francisco José. 2010. «Los límites del eliminacionismo: Una solución epigenética al problema mente-cerebro». Tesis doctoral. Universidad de Murcia. http://hdl.handle.net/10201/17600

(Hernández Rubio 2010)

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Rodríguez Vázquez, Silvia. 2012. «Flujos de traducción: Herramientas de ayuda a la gestión de proyectos en función de la situación de trabajo». Conferencia pronunciada en la Universidad de Salamanca, 8 de noviembre.

(Rodríguez Vázquez 2012)

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McDonald's Corporation. 2008. «McDonald's Happy Meal Toy Safety Facts». Acceso el 19 de julio. http://www.mcdonalds.com/corp/about/factsheets.html

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Ramírez, José Luis. 2012. «Hacer los deberes». *Blog de Lengua española*. Acceso el 17 de marzo. http://blog.lengua-e.com/2012/hacer-los-deberes/#comments

(Ramírez 2012)

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(Lourdes Díaz, correo electrónico al autor, 15 de mayo de 2011)

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[8] Spock, entrevista 67A, transcripción, Senn Oral History Collection, National Library of Medicine, Bethesda, MD.

(Spock, entrevista por Senn, 20 de noviembre de 1974)[2]

[2] Benjamin Spock, entrevista por Milton J. E. Senn, 20 de noviembre de 1974, entrevista 67A, transcripción, Senn Oral History Collection, National Library of Medicine, Bethesda, MD.

10. Obra registrada en bases de datos

Para documentos localizados mediante bases de datos o repositorios, se indica el nombre de dicha base y, entre paréntesis, el número de identificación recomendado en la misma.

Choi, Mihwa. 2008. «Contesting *Imaginaires* in Death Rituals during the Northern Song Dynasty». Tesis doctoral. Universidad de Chicago. ProQuest (AAT 3300426).

11. Documento legal y jurisprudencia

La mayoría de los escritos legales y públicos citan la documentación en el propio cuerpo, más que en notas, y prácticamente no incluyen bibliografía. Todo escrito legal que necesite algo más que mencionar una fuente en el texto tendrá que recurrir a notas a pie de página o final de capítulo. Para más detalles y ejemplos, véase el capítulo 14 del *Manual de Estilo de Chicago-Deusto*.

• El artículo deberá estar precedido por un resumen tanto en el idioma original del artículo (con una extensión entre 200 y 250 palabras) como en castellano y en inglés. Además, se deben colocar tres palabras clave tanto en el idioma original como en castellano y en inglés. Asimismo, el título del artículo deberá consignarse tanto en idioma original como en castellano y en inglés. Por último, se deben incluir tres códigos JEL, según: https://www.aeaweb.org/jel/guide/jel.php

• Los agradecimientos se pondrán en la segunda nota al pie de cada artículo.

• Para referencias bibliográficas el *Anuario Centro de Estudios Económicos de la Empresa y el Desarrollo* adhiere al sistema **Documentación II: citas autor-año** (con referencias autor-año formato básico, Listas de referencias y citas en el texto; y referencias autor-año casos especiales) (Torres Ripa 2013).

• Si se incluyen tablas y/o gráficos deberán remitirse los archivos originales con los que se formularon. Por ejemplo: archivo Excel. Asimismo, se deberá ajustar su extensión al tamaño establecido para la página.

Plagio y auto-plagio: Detección por medios electrónicos, detección de estilo y los pasos a los que se somete a las presunciones de usos engañosos en el artículo presentado para determinar si corresponde aplicar el código de conducta a los autores.

Cuando el Comité Editorial considera que un envío es de interés para la revista se utiliza la herramienta antiplagio PaperRater para controlar la originalidad de los manuscritos recibidos. Si la herramienta digital no ha detectado plagio hay una segunda etapa de escrutinio realizada a través de miembros del Comité Editorial, especializados en la temática de la contribución. La última instancia de detección se realiza en la etapa de arbitraje, la misma es llevada a cabo por dos árbitros externos (ajenos al equipo editorial y a la institución editora). Si se detecta plagio en alguna de las instancias se interrumpe el proceso de evaluación quedando rechazada la contribución. Se notifica al autor el motivo del rechazo.

Envío: dirección y forma de entrega del artículo original

Los trabajos recibidos son considerados por los miembros del Comité Editorial y por evaluadores externos (ajenos al equipo editorial y a la institución editora) a los fines del referato doblemente ciego. Es decir, los evaluadores no saben quiénes son los autores, y los autores no saben quiénes son los evaluadores. Los artículos son inicialmente revisados por el Comité Editorial, el cual revisa que satisfagan los requisitos formales y la presente política editorial; si los artículos no cumplen con los requisitos establecidos son rechazados. En caso de cumplir con ellos son admitidos. Luego, cada artículo o reseña admitido/a es evaluado por dos árbitros externos. En caso de disparidad en los dictámenes se toma la última decisión desde el Comité Editorial y/o desde la dirección de la revista. En caso de no haber disparidad entre los árbitros, la decisión final relativa a la publicación de los artículos y reseñas se toma en función de los dictámenes de los evaluadores externos, requiriéndose dos recomendaciones favorables para la publicación. Los posibles dictámenes son los siguientes: aceptado, aceptado con cambios menores, aceptado con cambios mayores y rechazado. El proceso de evaluación abarca entre dos y cuatro meses. Al ser aprobada la publicación los autores ceden al Centro de Estudios Económicos de la Empresa y el Desarrollo (CEEED) los derechos exclusivos para reproducir por cualquier medio y distribuir las contribuciones.

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