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Assessing the embeddedness of a Japanese-owned factory in the UK: The case of Sony in Wales, 1973 to 2016

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ABSTRACT
In 1973, Sony established a factory in Wales that by the 1990s became Europe's largest integrated producer of colour televisions. Although manufacturing ceased in 2005, other operations survived and grew. This case examines different perspectives of the complex embeddedness of this subsidiary, proposing two arguments connecting embeddedness to longevity. One concerns external subsidiary linkages, where subsidiary management used their power as a local employer and procurer of components to engage with regional government to secure financial and political support. The other is internal to the multinational organisation, as managers' subsidiary entrepreneurship enabled the advantages of their external embeddedness to be understood throughout the firm network, to benefit their local operations. These 'multiple embeddedness' dynamics were facilitated by Sony's 'global localisation' culture. The case finds that inward investors can make long-term and value-added contributions to regional economies, especially where proactive regional governments can engage with partially decentralised multinational firms.

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1. Introduction

From the 1970s, job losses caused by deindustrialisation throughout the UK's regions prompted governments and their agencies to attract Foreign Direct Investment (FDI). Some of the most prized FDI projects were the Japanese electronics factories that arrived from the 1970s. Japanese investment was important given the need of UK regions such as Wales to diversify away from slow growth and declining industries while adapting to the increased trading opportunities and pressures prompted by the UK's accession to the European Economic Community. The first Japanese company to open a plant in Wales was Takiron in 1972, and by 1987, it hosted the UK's largest regional concentration of Japanese manufacturing (Munday, 1990b). By the mid-1990s, 33 Japanese firms employed around 15,000 people (Munday et al., 1996) in what was described as 'one of the largest concentrations of Japanese manufacturing companies in […] Europe' (Welsh Development Agency, 1991, p. 14). Yet most of the large plants arriving in the 1970s and 1980s closed after 2000. Remaining

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Japanese plants tended to be smaller operations producing very specific electronic goods, electronic components, packaging, and car components.

Closures and the high-profile failure of a semiconductor and consumer electronics project proposed by the South Korean LG group in the late 1990s (Gooberman, 2020) led to policy-maker scepticism to the developmental role of FDI as Wales struggled to attract and retain such investment, given competition from more cost-effective locations, including those in Eastern Europe or Asia. Such scepticism was apparent regardless of investor type or country of origin. Concerns on FDI were amplified by perceptions that it focused on low value-added assembly with poor levels of regional embeddedness (Phelps et al., 2003; Young et al., 1988). Yet, McNabb and Munday (2017) demonstrated that between 1966 and 2003, foreign-owned manufacturing in Wales featured better survival prospects than indigenous firms. However, the literature lacks a subsidiary case study or any other detailed information shedding light on such survival patterns.

This article is a case study of the multiple embeddedness of a Japanese-owned manufacturing subsidiary in a UK region. In 1973, Sony established a factory at Bridgend that by the late 1990s became Europe's largest integrated television plant employing some 4,500 people. Although television manufacturing ceased in 2005, other operations survived even as the company closed its European factories or transferred them to other operators. Sony's operations in Wales were sustained subsequently by producing high-value digital items and third-party manufacturing, although employing far fewer workers than in their 1990s peak. Our research question is: what dimensions of multiple embeddedness contributed to Sony's longevity?

Sony in Wales has three merits as a case study. The first is that it is an example of a Japanese consumer electronics subsidiary that survived long-term while the regional dialogue on economic development turned against FDI. Its survival is unusual as products made by Japanese firms entering Wales during the 1970s and 1980s came to the end of their life cycles by the 1990s/early 2000s. This prompted most original equipment manufacturers and supply chain companies to either disinvest or relocate to cheaper factor cost locations in eastern Europe or Asia. The second is that it informs us of regional dynamics shaping Multinational Corporation (MNC) behaviour as the concentration of Japanese FDI within traditional industrial regions was supplanted by a drift towards southern England amidst intensified investment in service activities (Buckley et al., 2013). The third is data availability. The retention of records by Japanese MNCs tends to focus on data most relevant to the preparation of '*shashi*', self-published grey literature. These are often developed by businesses as educational materials for employees (for example, as a means of sharing management principles and values) (Matsuzaki, 2021, 2022), rather than providing for comprehensive archives that would enable researchers to examine their subsidiaries. Meanwhile, individual Japanese factories usually have little presence in government archives where they are located. Data paucity means that although contemporary researchers explored their factory-level industrial relations and operations management in the 1980s and 1990s (e.g. Morris et al., 1993), there are very few studies of Japanese manufacturing subsidiaries in Wales or elsewhere in Europe within the international business (Meyer et al., 2020) or business history literatures. The only such studies of UK-based subsidiaries are Trevor's (1988, 1991) analyses of Toshiba's subsidiary in Plymouth, arguing that its commercial success was assisted by the localisation of Japanese management techniques.

Articles in this journal have called for business historians to place more emphasis on explaining sources and methods (e.g. Smith & Umemura, 2019). This article sources data from the Welsh Office's (a territorial government department whose functions were assumed from 1999 by the Welsh Government) Industry Division and its Welsh Development Agency (WDA). Their records are held by the UK's National Archives. These bodies were responsible for liaising with overseas investors. However, when deciding which records to send to the National Archives for retention, officials selected those on only a few companies that 'had a major impact on the development of industry in Wales' (National Archives, hereafter NA, BD 141, 2025).

The extent to which public bodies valued Sony means that significant data are available covering many decades. These include correspondence between plant managers and civil servants on applications for financial support as well as discussions on sourcing, aftercare, and Sony's cultural embedding. Data grants insight as to the priorities of Sony managers and government officials, and global debates within the company as their factories competed for internal investment. We also draw on our interviews of senior Sony managers with decades of experience at Bridgend and Pencoed, and an official who led the government's FDI promotion and aftercare in Wales. Other data were sourced from newspapers, including those accessed *via* the Nikkei database, and secondary publications, including a memoir written by a former Sony Bridgend plant manager. These data offer an unusual opportunity to track the subsidiary activities of an MNC without accessing its parent company records. This methodological approach might be transferable to other Japanese companies as well as other country contexts, such as China, where accessing primary records generated by businesses is difficult.

This article makes two arguments as to the types of multiple embeddedness that prompted Sony's longevity. One was external to the MNC, where subsidiary management used their power as a local employer and procurer of components to engage with regional government to secure financial and political support. The other was internal to the MNC, where senior managers' subsidiary entrepreneurship enabled the advantages of its external embeddedness to be widely understood throughout the firm network, to the benefit of their subsidiary operation. Both dynamics were facilitated by Sony's distinctive 'global localisation' culture that prioritised the development of autonomous subsidiaries. Subsidiary managers emerged as corporate influencers even as they acted on behalf of their subsidiary in a manner far removed from their traditional conception as headquarters-directed organisations. This case study finds that investors can make long-term contributions to regional economies by doing more than using cost-driven and market access factors to carry out low-value-added assembly. This is especially the case where proactive regional government bodies engage with partially decentralised MNCs while collaborating with and drawing assistance from their national governments.

2. Multiple embeddedness and FDI

Literature on foreign plant longevity (e.g. Raines et al., 2001; Turok, 1993) has explored 'branch plants' (Firn, 1975) by focusing on their 'embeddedness', defined by Phelps et al. (2003) as the depth and quality of their relationships with local firms and the extent of local spill-overs occurring through technological improvement and new capital formation. Meyer et al. (2011) explore 'multiple embeddedness' to argue that it features two levels (see Table 1). At the

Table 1. MNC regional embeddedness.

Level	Type	Primary components/indicators
Firm	–	Management of subsidiaries across multiple contexts while enabling the regional embeddedness of each
Subsidiary	External	Local sourcing of supplies and servicesRegional government financial and political support
	Internal	Subsidiary entrepreneurshipResearch, design and development

Source: Following from Meyer et al. (2011).

firm-level, the MNC needs to manage its portfolio of subsidiaries in multiple and heterogenous contexts while devising strategies to embed itself in each, as in the case of Sony, to ensure proximity between the MNC and its consumer markets.

At the subsidiary level, such enterprises need to demonstrate simultaneously two types of embeddedness. The first is external in that the MNC subsidiary should be able to take full advantage of economic opportunities offered by its location, not least in further exploiting its technology ownership advantages over domestic firms (Dunning, 1986). One component of such external embeddedness is the extent to which subsidiaries source components locally. Encouraging local sourcing emerged as a priority for regional government bodies from the 1980s. Although research (Turok, 1993) found evidence of low levels of regional purchasing linkages, Munday and Roberts (2001) argued that Japanese consumer electronics plants demonstrated high levels of local sourcing relative to other investors. Another component is the financial and political support gained by subsidiaries from regional governments for activities such as capital investment, skills upgrading, and research and development. Such linkages can go beyond 'direct' connections with suppliers and customers, to include universities, competitors and government agencies that can help define subsidiary activities in intangible and largely tacit ways.

Both components of subsidiary level external embeddedness were a common focus of UK regional development agency aftercare. Phelps and Fuller (2000) argued that aftercare helped cultivate capital allegiance after the initial investment, while Tewdwr-Jones and Phelps (2000) observed how regional agencies could influence land use planning systems to help subsidiaries win MNC location tournaments. Attaining external embeddedness requires close links with local institutions. Researchers including Fortwengel and Jackson (2016) have argued that MNC subsidiaries can influence such institutions by coordinating with host country stakeholders. Yet, Röell et al. (2024) argued that few researchers have explored how individual subsidiaries developed strategies to navigate unfamiliar host country institutional contexts.

The second type of embeddedness is internal to the subsidiary in that it should be sufficiently embedded within its parent MNC networks to enable the advantages from external embeddedness to be widely understood and potentially available to other parts of the firm. One component of such internal embeddedness is the autonomy of the plant management and the extent to which it can demonstrate subsidiary entrepreneurship (Firn, 1975). Subsidiaries were once seen as entities subsumed within a unitary organisation dominated by headquarters. Yet, more recent accounts (Cantwell et al., 2010; Gibbs, 2024) argued that greater subsidiary autonomy helps facilitate their entrepreneurship, influencing their commercial trajectories and relationships with public bodies. In this respect, Meyer et al. (2020), reviewing the literature on MNC subsidiaries, argued that it did not adequately consider

how 'subsidiaries do not always act just as HQ-directed organisational agents, but within constraints act entrepreneurially and develop their own strategies' (Meyer et al., 2020, p. 538). Moreover, few studies have examined the activities of individual leaders at the subsidiary level. Nevertheless, Birkinshaw (1997) explored if subsidiaries might avoid becoming 'passive recipients' of headquarters instructions by instead acting on their own initiative, although such initiative depends on the internal governance of the MNC. Finally, Ocasio and Joseph (2005) discuss how subsidiary managers can pursue their objectives through gaining the attention of higher-level management.

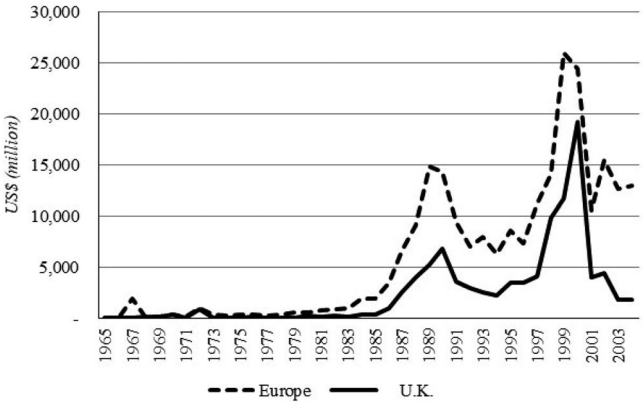
A second component of internal embeddedness is the extent of research, design, and development. Their existence is widely used as an indicator of embeddedness as they require higher skilled staff, signal the importance of the subsidiary to the global organisation, and add risk and expense to relocating subsidiary activities elsewhere. Phelps et al. (2003) argued that although most MNC subsidiaries featured some research, design, and development, they were more likely to be adapting products than developing new items.

Although the literature identifies embeddedness dimensions, there is limited consensus as to how they interact to influence plant longevity, symbolised by winning reinvestments from parent MNCs. Some of this uncertainty relates to the difficulty faced by managers when seeking to maintain multiple types of embeddedness. Meyer et al. (2011) argue that the juxtaposition of the subsidiary role within the MNE network with its local identity and linkages can challenge managers in that they have to reconcile parent interests (potentially tied up with the exploitation of MNE ownership advantages) with their local business interests. For instance, a local subsidiary may resist headquarters' attempts to redeploy its locally generated rents to other subsidiaries with greater strategic importance, but such efforts could lessen their standing within the MNC network. Other uncertainty is prompted by the difficulties in obtaining subsidiary-level and headquarters-level data sufficient to identify if subsidiary management has succeeded in embedding their operations internally and externally, while dealing with the impact of external circumstances. Impact is encapsulated by Gibbs' (2024, p. 945) argument that 'subsidiaries can only be as enduring as the local and national environment in which they develop allows them to be'.

This paper responds to Meyer et al.'s (2020) call for more research on subsidiaries as units of analysis and on how they respond to dynamic changes in their environments, given the need to enhance understanding of business behaviour within a volatile global economy. The literature argues that multiple embeddedness dimensions can influence subsidiary plant longevity, and this article presents an account of Sony's operations to identify the most salient.

3. Japanese FDI in Europe, the UK, and UK regions

The first Japanese entity manufacturing in the UK was likely YKK, whose Liverpool operation opened in 1966. The first in Wales was Takiron from 1972 (Munday, 1990b). In 1973, when Sony began manufacturing in Bridgend, Japanese outward FDI in the UK had reached $62 million compared to a Europe-wide total of $337 million. By 1987, the UK accounted for 38 per cent of all Japanese outward investment into Europe, as part of a broader trend between 1980 and 2004 when the UK secured 42 per cent of such investment (see Graph 1).



Graph 1. Japanese outward FDI to the UK and Europe, 1965–2004.
Source: JETRO, 2014 (https://www.jetro.go.jp/en/reports/statistics.html). Accessed 18 December 2024.

Many researchers have examined the evolution of Japanese manufacturing investment into the UK (see Dunning, 1986; Munday, 1990b; Morris et al., 1993; Taylor, 1993, and more recently, Kumasako, 2016). Factors prompting research included interest in how Japanese manufacturing firms would adapt to the UK operating environment, and the spread of Japanese operational methods (see, for example, Morris et al., 1993; Oliver & Wilkinson, 1989). One important example was Trevor's (1988, 1991) analyses of Toshiba's joint venture with Rank Corporation at Plymouth. The joint venture failed, and Toshiba took full control in 1981. It deployed management techniques blending Japanese and UK operational practices with local conditions. By 1986, Toshiba's senior management considered the plant to be its most successful outside of Japan, as productivity nearly trebled between 1981 and 1987 while no working days were lost to industrial disputes.

Two strands of research have explored the location decision-making of Japanese businesses. One examines the popularity of the UK by identifying factors of attraction. Kumasako (2016) argues that early Japanese plants were developed to counter trade frictions and anti-dumping duties. Also, the attraction of 'big name' firms in the early 1970s such as Sony, Matsushita, Hitachi and Mitsubishi may have prompted a 'follow the leader' effect. Finally, the UK Government made considerable efforts to promote the country as a location for Japanese FDI.

The other strand examines the regional distribution of Japanese manufacturing. Taylor (1993) found that it had been influenced by government grants, regional industrial structure, and labour availability. Japanese investment was prized in regions where once dominant nationalised coal and steel industries were shedding labour, while by the 1970s UK UK-owned secondary manufacturing was struggling. Regional government bodies deployed financial assistance and aftercare to investors locating in state-designated 'Assisted Areas', including Bridgend. Such investment became a centrepiece of regional economic strategy. Yet Japanese investment to the UK declined after 2000. Competition for projects was stiffer given EU enlargement, while products made by regional subsidiaries, such as those in Wales, came to the end of their life cycles, with both factors combining to prompt disinvestment.

4. Sony's internationalisation strategies

The evolution of Sony manufacturing in Wales after 1973 took place within the context of its parent company's global strategies (for MNE global strategies see Ghoshal, 1987; Hamel & Prahalad, 1985). Mori (2016) argues that Sony developed its business model through a disruptive growth engine where rapid internationalisation was integral. In the 1950s, Sony co-founder Akio Morita argued that the company should internationalise through exporting, primarily transistor radios. In the subsequent decade, Sony developed marketing enterprises to interact directly with businesses in target markets, a 'going alone' approach unusual for Japanese enterprises (Mori, 2016). This approach created local sales and marketing offices staffed by Sony employees to improve knowledge of local conditions and help justify price premiums. The next stage involved an evolution from third-party distributors towards discrete and wholly-owned sales and marketing offices. In 1968, Sony dissolved its UK relationship with Debenhams and set up Sony (UK) Limited. Such offices were a precursor to assembly operations that were then themselves supplanted by higher value-added manufacturing operations (Sony, 1996).

Localisation progressed from manufacturing in local markets, increasing local content and working with local suppliers, to establishing engineering/research and development centres closer to final markets (Morris et al., 1993). This process involved developing more localised operating divisions with greater decision-making capacity over production, sales, and technology. Indeed, Mori (2016) reveals that Morita was concerned as to how far regional operations might be able to cut the umbilical cord with Sony headquarters. In 1988, Morita argued that Sony's regional headquarters in Japan, US, Europe, and Asia should localise operations further to help Sony become a fully global corporation. This imperative meant that localisation evolved into global localisation where Sony met 'local needs with local operations while developing common global concepts and technologies'. In 1992, Morita warned that Japanese companies 'faced collapse' if they failed to adapt their corporate policies to suit other national contexts (Nihon Keizai Shimbun, 1992).

The development pattern of Sony UK's operations, of which in-market manufacturing at Bridgend and Pencoed plants was a key component, exemplified Morita's aim of achieving proximity between Sony and its consumer markets. The company's policy throughout the 1970s of grounding localised management and production operations in the US and Europe was a critical factor in Sony's global growth in the 1980s and early 1990s. Consequently, while the development of Sony's CTV manufacturing in the US and Europe was associated with trade pressures and a strengthening yen, there were also 'push' factors of tailoring production to meet local market needs. Global localisation also implied that some R&D should be undertaken close to the location of final demand.

Yet, the policy faced internal obstacles. In 1994, Sony President Norio Ohga argued that Sony needed a more versatile corporate structure to be a 'more market-driven, market-responsive company' (Nikkei Weekly, 2007). Some silos remained even as poor financial performances in the mid-1990s and beyond prompted radical restructuring. In 2007, Howard Stringer became Sony CEO and amongst his priorities was challenging silo mentalities (Nikkei Weekly, 1994). Nevertheless, Sony's strategy as to overseas production of colour televisions (CTVs) and cathode ray tubes (CRTs) was ultimately shaped by technological change as product markets diversified. By 2014, Sony announced a restructuring that removed most televisions and personal computers from its manufacturing portfolio.

The following section sets out our case material divided into four periods: 1973–1979; 1979–1991; 1991–2005; and 2005–2016. Each was marked by changes in Sony's internationalisation strategy which impacted on its Bridgend and Pencoed operations.

5. 1973–1979, Establishment of analogue production

In 1968, the Sony Corporation of Japan established Sony (UK) as a wholly owned subsidiary to sell and service its products. It headquartered near London and in the subsequent year asked the UK Government's Department of Trade and Industry (DTI) for assistance in identifying sites for a small factory. This project failed to materialise but a second, larger, project emerged in 1972 to manufacture CTVs. Assisted by the DTI and the British Embassy in Tokyo, Sony considered locations throughout the UK before choosing Bridgend in south Wales (NA BD 93/54.,54, 1984a, p. 1). Sony UK's manufacturing director Hiroshi Okochi argued that Bridgend was chosen given its proximity to large domestic markets (Western Mail, 1974). Other incentives included labour availability, the allocation of a recently vacated government-owned 110,000 sq. ft. factory on a 21-year lease with a 2-year rent-free concession, and interest relief and regional assistance grants of £460,800 (NA BT 177/2739, 1977a, BT 177/,2739, 1977b, p. 2). Another factor was the intervention of public officials in Wales. DTI officials attempted to deny Sony its chosen factory in Wales, as it wanted to attract factories whose workforce would be predominantly male given their high localised unemployment, but Sony was expected to employ a semi-skilled and largely female workforce. In response, Peter Thomas, Cabinet Secretary of State for Wales responsible for the Welsh Office, complained to the DTI Minister who overturned the decision (NA BT 177/2737, 1973a, 1973b).

Meanwhile, local sourcing of goods and services emerged as a priority during negotiations over financial support. In part, this reflected pressure from domestic competitors fearful of greater product market competition, amplified by British owned manufacturer GEC opposing Sony's presence as they might poach staff from its CTV factory at Hirwaun, 25 miles from Bridgend (NA BT 177/2737, 1973c). Nevertheless, the need to secure investment in peripheral areas meant that the DTI chose not to seek formal undertakings but rather applied pressure informally by linking 'local' sourcing with future financial support. Officials met Okochi to ascertain Sony's plans. An official argued subsequently that it would be possible to 'jolly [Sony] along carefully and diplomatically to behave as we would like them to […] Japanese are deferential people, and their industrialists are well used to being cosy with government' (NA BT 177/2737, 1973d).

Sony occupied the factory in late 1973 and began operations in the subsequent June (NA BD 93/54, 1984a). Its importance was reflected in its opening by Prince Charles whose speech contained reference to the importance of local sourcing, and Sony co-founder and President Akio Morita who recalled the Prince's suggestion of 1970 when they met in Tokyo that his company open a factory in Wales (NA BT 177/2739, 1974). Sony planned to employ 300 people to produce 5,000 CTVs monthly (Western Mail, 1973, 1974). These CTVs used Sony's proprietary 'Trinitron' technology which helped it secure long-term market leadership. The factory served two markets. One was domestic, also served by UK firms such as Thorn-EMI, Rediffusion and Pye where only 20 per cent of households owned a colour television compared to over 80 per cent in Japan (Times, 1975). The other was European, more accessible to exporters given the UK's 1973 accession to the European Economic Community.

Worries as to industrial relations prompted Okochi to argue that Sony (UK) was 'only willing to negotiate through one designated trades union' (Times, 1976). It concluded a single-union recognition agreement with the Amalgamated Engineering Union. In the agreement, concluded before operations started, both sides undertook to follow arbitration procedures before industrial action could be taken. Management also wanted union assistance in recruiting skilled labour (Munday, 1990b, p. 91). Simultaneously, the firm sought to address what many Japanese industrialists saw as 'eikoku byo' (the 'English Disease') of poor industrial relations. In late 1976 Okochi told Japanese industrialists that absenteeism at the Bridgend plant was at levels like those in Japan (Times, 1976).

Nevertheless, the factory initially operated below capacity as Sony trained its workforce and identified suppliers who could meet quality thresholds, having told the DTI that it 'intended to work towards as much local production as possible' (NA BT 177/2738, 1973). Yet, the DTI pressed Sony continually to increase local sourcing. Management responded by sending their chief engineer to Japan to obtain 'more flexibility in local judgement' as to procurement, telling the DTI in October 1976 that 51.6 per cent of all components bar the CRT were UK sourced with a further 8.7 per cent marked as suitable if 'price and quality are acceptable' (NA BT 177/2739, 1976).

Continued pressure prompted an irritated Morita to meet DTI and embassy representatives in Tokyo where he 'laid out a very long table' of faulty British-made components destined originally for Bridgend; a diplomat noted afterwards that Morita's 'devotion to quality control is well known and borders on the fanatical' (NA BT 177/2739,2739, 1977c). Relationships between Sony Bridgend and government bodies were close if occasionally fraught. Closeness was reflected by flurries of correspondence and visits. One example was in 1977 when Secretary of State for Wales John Morris visited the factory, later telling the Prime Minister that Sony's 'ruthless' approach to quality there was driving up supplier standards and was 'beneficial' to the UK (NA BT 177/2739, 1977d).

Meanwhile, production increased and in September 1976 the first export shipment of 300 CTVs was made to the Netherlands (NA BT 177/2739, 1977e; Western Mail, 1976). By early 1977 management was confident that the factory could export 50 per cent of its output (Western Mail, 1977a). Shortly afterwards, they concluded that the plant's export success 'exceeded all expectations' and were planning to double production and employ more than 600 staff by early 1978 (Western Mail, 1977b, 1977c). In the event, the plant's annual production grew from 40,000 CTVs in 1976 to 107,000 in 1979 (NA BD 93/54, 1984b). Sony's traditional pursuit of high-quality production enabled it to gain UK market share quickly. Their arrival and that of other far eastern manufacturers prompted the share of the CTV market gained by overseas-owned companies to grow from negligible levels at the start of the decade to around 30 per cent by 1978.

6. 1979–1991, Expansion of analogue production

The expansion of the CTV factory accelerated after 1979. By 1982, it exported around half of its production and was the UK's second largest exporter of CTVs, while officials believed its productivity to be the highest of any Sony plants outside Japan (NA BD 93/53, 1982a). Yet although the Sony (UK) managing director stated in 1981 that 'we source the vast majority of our components locally or we manufacture them ourselves at Bridgend' (NA BD 93/53, 1981a) problems continued. Managers cited suppliers' 'wrong attitude' and 'lack of

understanding' of Sony's needs, often prompting the company to order each component type from one supplier to establish a relationship that incentivised contractors to improve quality (NA BD 93/54, 1982a; BD 93/54, 1983a). Other techniques to boost supplier quality included greater on-site testing of components, increasing the amount of design work carried out locally, and deploying dedicated teams of Japanese and UK personnel to liaise with local suppliers (NA BD 93/54, 1983a). Meanwhile, a second wave of Japanese investors established factories in Wales to supply components to plants such as Sony. One example was Mitsubishi-owned Diaplastics that in 1988 opened a factory in Bridgend producing plastic moulded components such as CTV cabinets for Sony (Author's notes of a visit to the Diaplastics factory, 4 March 1992).

The exception in terms of local sourcing was the CRT, a vital and substantial part of each television that was imported from Japan. Sony had been considering opening a tube plant in Europe since the mid-1970s and by 1979 the newly appointed Sony (UK) managing director Bill Fulton was corresponding with the DTI about the possibility of one being sited at Bridgend. He kept the DTI informed as to discussions within Sony and an alliance developed, prompting the department to ask the British Embassy to 'lobby Sony at all levels' (NA BT 177/2740, 1979). In the subsequent year, Sony announced an expansion at Bridgend to produce tubes that doubled its on-site investment, while many of the newly created jobs required technical qualifications in subjects such as chemical engineering (Rees & Thomas, 1992). This expansion's importance to the government was reflected by its 1982 opening by the Princess of Wales (NA BT 93/54, 1982b, p. 1), while in 1980 Sony Bridgend had been awarded the Queens Award for Export Achievement. Meanwhile, expansion continued. In July 1983 Sony announced a doubling of tube plant capacity and by November, over a thousand workers worked at its Bridgend subsidiary. Seventy per cent of production was exported by 1987 (NA BD 93/56, 1987a). In the same year it announced a further doubling of production by 1990 when it aimed to have secured 6.8 per cent of the UK market and 4.3 per cent of the European market (NA BD 93/56, 1987b, 1). The plant's importance to Sony also meant that it produced key components such as CRTs for Sony's other European CTV plants at Barcelona and Stuttgart (Morris et al., 1993).

Suehiro Nakamura, plant manager between 1980 and 1991, worked progressively to accrue greater autonomy (Nakamura, 2004). One initiative was centralising sales and production planning for Bridgend at that plant. In 1980 Sony's European sales division was based in Germany. It gathered data on UK and European markets before sending these to the Production Control Division in Tokyo that then decided production schedules for Bridgend to implement (Nakamura, 2004, 88). This decision-making process was fragmented and slow. Nakamura, however, believed that 'factories should be as close to the market as possible' and asserted control over the planning of production at Bridgend. Another initiative was standardising the CTV chassis across different models to boost production efficiency, while a third was a drive to reduce production defects. These initiatives jointly enabled a streamlining of production, inventory and sales, boosting the agency of Bridgend's management within Sony's MNC network.

By 1990, research and development on videotext and software was carried out at Bridgend, while a design team developed a European CTV chassis. Yet research and development formed a small proportion of all on-site activity as only around 50 development engineers were employed (Morris et al., 1993). Meanwhile, the single-union deal negotiated

at the factory's creation maintained industrial peace. Only one short strike took place, in 1979, and this was a local manifestation of a national engineering dispute. Industrial peace was paralleled by the management's focus on quality, including 'quality circles' designed to empower employee groups to suggest methods by which their activities could be made more efficient (BD 93/56, 1987c). Nakamura, for example, celebrated success in reducing production defects through 'a big dance party' and awarding certificates, arguing that awarding bonuses to individuals or teams could create shop-floor divisions (Nakamura, 2004, p. 94).

Crucially, the factory's importance was boosted by the difficult economic situation in Wales. Attracting overseas investment emerged as a key activity to offset structural change, prompting the WDA's managing director to argue in 1982 that FDI was vitally important (NA WA 8/78, 1982 p. 4). Efforts to attract investment intensified and by 1986 ten Japanese companies, predominantly producing consumer electronics, operated in Wales (Western Mail, 1986). Sony was the most high-profile and the Welsh Office described it as 'one of the major success stories in Wales over the past decade' (NA BD 93/57, 1990a).

Sony's significance had two manifestations. One was symbolic through frequent awards and official visits. The plant won two further Queens Awards for Export amongst other accolades such as 'Britain's Best Factory'. Official visits and openings included those involving Prime Minister John Major as well as the Prince and Princess of Wales reflected economic development imperatives. Secretary of State for Wales Nicholas Edwards argued that royal 'identification' with Sony Bridgend would 'highlight the suitability of Wales as a base for inward investment by major foreign companies' (NA BD 93/53, 1981b). Moreover, Sony management sought to embed themselves publicly in the local community. One example was Nakamura assuming the symbolically important role of Bridgend Rugby Club vice-chair (Golwg, 1989) while the WDA encouraged occasionally hyperbolic comment about cultural affinities between the Welsh and Japanese societies. In 1990, it funded a book on the economy and society of Wales where its chief executive argued that 'the stunning success' of Japanese plants was helped by 'the fact that the communicative, consensus style of management comes naturally to the Japanese and Welsh workforce alike' (Waterstone, 1990, p. 237).

The other manifestation was high levels of financial support. In 1981, Sony (UK) was loaned £3.7 million from the European Coal and Steel Community to employ ex-steelworkers and coal miners, after the UK's representatives within the European Economic Community's Council of Ministers blocked sustained preventative efforts by France (Western Mail, 1981; NA BD 93/53, 1982b). Moreover, the WDA built the Bridgend factory extension for tube production that opened in 1982 (NA BD 93/53, 1982b). Between 1981 and 1991, Sony Bridgend was offered government grants totalling £12 million. These included two grants totalling £700,000 awarded in 1980 and 1982 to support the tube plant, and £4.8 million in 1987 to support the doubling of CTV production (Morris et al., 1993, p. 40; NA BD 93/54, 1984c; BD 93/56, 1987d).

7. 1991–2005, Peak, retreat and closure of analogue production, establishment of digital production

By 1990, the Bridgend site was operating at its annual physical production capacity of around one million CTVs while its output had grown almost 10-fold since 1979 (NA BD 93/57, 1990b). It employed 2,657 people by the following year of whom 1,653 produced CTVs with the

remainder producing CRTs or other components. Meanwhile, its sales grew from £138.4 million in 1989 to £333.5 million in 1991 with over 80 per cent derived from exports (NA BD 93/65, 1991a, p. 2).

Debates within Sony as to how to increase output continued as managers of its European factories made competing proposals. Sony's higher management initially favoured expanding its Barcelona operation and producing fewer CTVs at Stuttgart but eventually proposed a new factory in south Wales at Pencoed, a few miles from Bridgend. Welsh Office officials believed that the decision was assisted by the elevation of Nakamura, Sony Bridgend's managing director from 1980 to 1991, to assume responsibility for the company's worldwide CTV business (NA BD 93/65, 1992a). He had helped embed the Bridgend facility within the Sony MNC network, while arguing simultaneously in favour of local manufacturing and management as 'local people know the local situation best' (Nakamura, 2004). The expansion comprised a new 160-acre Sony Technology Park at Pencoed and the relocation of CTV production from Bridgend to a new factory at Pencoed to boost annual production to 1.5 million units and create 1,400 jobs. Meanwhile, floorspace released at Bridgend would be used to expand tube production (NA BD 93/61, 1991a; BD 93/62, 1991b).

Sony Bridgend management were determined to emphasise their role in obtaining the project against opposition from other plants, primarily Barcelona. They rebuffed government attempts to announce the project in London, a dynamic attributed by civil servants to 'internal company politics' (NA BD 93/62, 1991b). Yet the state played an important role in attracting the plant as the WDA carried out land assembly and led negotiations (NA WA, 8/174, 1991), the Welsh Office provided £10 million towards the project's capital costs of £150 million, and the government helped Sony obtain a European Coal and Steel Community loan of £86.2 million covering half of all capital expenditure on the new project between 1991 and 1993 (NA BD 93/62, 1991c; BD 93/65, 1992b, BD 93/65, 1991b). WDA Executive Director for Marketing Ian Rooks described how the Pencoed project (Author's interview with Ian Rooks, 1 November 2011):

> *Anchored both the original development [Bridgend] but it also brought new leading-edge skills and products. And I also know the amount of personal effort […] because of how demanding they [Sony] are in terms of the criteria that you have to satisfy, both at a personal level, in terms of relationship and trust and confidence, but also at a business level in terms of meeting their requirements on time, in budget, and so forth.*

After Pencoed was announced Morita visited London and Bridgend and argued that all parts of his company should be seen as 'links in a single chain of innovation. Each allowed to pursue its own challenges but also aware of how it should integrate with the others' (NA BD 93/64, 1992a). He also joined a delegation to the Prime Minister, where he set out his view that Sony (UK) was a 'wholly British company' (NA BD 93/62, 1991d). Morita's views on the importance of creating more integrated and autonomous production units prompted Sony's 'global localisation' policy. This in turn prompted Sony to locate its research and development for European CRT production at Pencoed (NA BD 93/62, 1991a, BD 93/62, 1991e) although the number of jobs involved was small and the site remained focused on manufacturing.

By December 1992, Pencoed employed 1,700 people and the Secretary of State for Wales described Sony as 'a jewel in our crown' when writing to Sony's Executive Deputy President H. Kanoi. Its long-term success seemed assured as Kanoi argued that the market for the

'present type of [CTV] equipment' was secure until at least 2007 given the high-definition CRT technology on which Sony was focusing research and development (NA BD 93/65, 1992c, p. 1, 1992d, 1992e). Meanwhile, the plant had established training partnerships with four further education colleges and a polytechnic, as well as links with regional universities, as it preferred to recruit graduates locally to maximise retention (Rees & Thomas, 1992).

The Queen officially opened the Pencoed plant in October 1993 while her presence reflected how officials saw Sony as being 'very proud' of its royal links (NA BD 93/66, 1993). In his memoirs, Morita discussed the frequent ceremonies involving the Royal Family. He compared the involvement of British authorities favourably with those in the United States and France, arguing that he 'liked the sense of involvement of the British […] they have been good to me in many ways' (Morita, 1987). The company's importance to officials in Wales was again reflected by their careful curation of responses with officials in London and Tokyo to Morita's hospitalisation in late 1993. By this time, 90 per cent of components used to manufacture CTVs at Bridgend were sourced from within the European Community and its supplier network comprised over 40 companies in Wales where it administered a Sony Quality Award to help boost their performance (NA BD 93/64, 1992b). Suppliers included those producing plastic housings, remote controls and subassemblies (Munday, 1990a, p. 9). By this time, employment was climbing towards its late 1990s peak of around 4,500. By 1998, the plant was the largest integrated CTV plant in Europe while Sony (UK) was the UK's 22nd largest exporter (House of Commons, 1998). The plant's success was based on manufacturing analogue technology. Nevertheless, this focus began to shift in 1994 when Pencoed started to manufacture products using digital technology. By 2000, it was producing broadcast cameras after their production was transferred from the United States after the European Union increased import duties, and hosted Sony's UK Customer Service Centre (Wales 247, 2018).

Yet the CTV market was changing as flat screen plasma and liquid crystal display TVs began to enter the market. Sony was disinterested in producing plasma or liquid crystal display panels. It wanted instead to develop more advanced organic light emitting display devices that would help retain the reputation for innovation underpinning its business model. But Sony had under-estimated the difficulty of commercialising such technology and the speed at which consumers would adopt flat screens. It was also reluctant to accept that the CRT production facilities in which it had recently invested faced obsolescence. By 2003 demand for Sony's Trinitron CTVs was falling, it was struggling to obtain liquid crystal display panels from third party vendors and was forced to establish a joint venture with Samsung to obtain a reliable supply (Chang, 2008).

By 2005, flat screens accounted for some seventy per cent of the European market and the local press reported that the Bridgend plant had been 'under a cloud' for several years, unsurprising given other closures such as Hitachi's Hirwaun plant in 2001. The emerging obsolescence of CRT technology prompted the first redundancies of some 400 workers in 2000. By 2004, the plant had shrunk to around 1,200 employees when a further 300 were made redundant. The end of Trinitron CTV production was now inevitable. A Sony representative arrived from Japan and assembled Bridgend and Pencoed management for what they expected to be a normal meeting. Instead, he addressed them in the boardroom and said 'OK, stop […] shut down, sell both Bridgend and Pencoed' (Authors' interview with Sony Pencoed management, 14 March 2024). In mid-2005, Sony announced publicly that it was closing its television factories in Wales as the transition to flat screens had 'been much

quicker' than their expectations (Times, 2005). It was to manufacture liquid crystal displays in a new plant in Slovakia that offered financial incentives, competitive wage levels and market access given the country's 2004 accession to the European Union (Western Mail, 2005), although these operations were transferred to the Taiwanese Foxconn company shortly after their commencement.

8. 2005–2016: expansion of digital production and introduction of third-party manufacturing

Local management realised that CTV production and the Bridgend plant could not be saved but were determined to salvage some of the Pencoed operation and its production of digital items. Managing Director Steve Dalton remarked later that survival required greater innovation as 'manufacturing was a long line with lots of people working close together. Those days are gone' (BBC News, 2023). Their preferred option was to expand the plant's digital production while developing third-party manufacturing. Dalton then spent months convincing higher management that this approach was feasible, eventually securing their consent to proceed subject to three conditions that would if breached prompt immediate closure. Pencoed was to receive no financial or other assistance from Sony, its third-party manufacturing must not conflict with Sony products, and the factory must not make financial losses (Authors' interview with Sony Pencoed management, 14 March 2024).

Pencoed management set out their objectives in a five-year plan that aimed to stabilise operations. Success was defined as securing the plant's status as Sony's preferred supplier of some digital camera types, launching third party manufacturing, and solidifying its servicing activities. Meanwhile, management used employee voice techniques to further engage the workforce with their survival plan, boosting productivity that in turn assisted the plant when bidding for work. Higher management's approval was symbolised by Sony Corporation Chief Executive Officer Howard Stringer's 2006 observation that the Pencoed workforce had become 'entrepreneurial virtually overnight' (Human Resources, 2007, p. 29).

Management had two operational foci. One was to develop Pencoed as a digital product manufacturing centre. A crucial achievement was persuading Sony in 2006 to designate the factory as the only facility outside Japan to produce new types of high-definition digital cameras, and as the European service and repair centre for such devices. Further expansion took place in 2010 as the plant began to manufacture circuit boards for Sony's liquid crystal display TVs (BBC News, 2012). Meanwhile, Pencoed's servicing of Sony products produced elsewhere combined with manufacturing to enable it to integrate both activities within its commercial offer. One example was that while the factory provided the cameras used at the 2010 World Cup and subsequent events, it also built them to specifications, installed them at stadiums, and repatriated them to Pencoed before reselling them (Authors' interview with Sony Pencoed management, 14 March 2024). Moreover, the plant's focus on flexibility spurred experimentation of a type not usually found within Japanese subsidiaries including that prompted by its sub-letting of surplus floor space. One tenant was a post-production broadcast media company whose client required studio space immediately, prompting management to temporarily rent out warehouse space to film the BBC's Dr Who series. One Sony manager recalled 'a submarine in there […] with a full swimming pool' (Authors' interview with Sony Pencoed management, 14 March 2024).

The plant's other focus was third-party manufacturing, where success involved an attitudinal shift from more traditional manufacturing characterised by rigorous internal processes and well governed design parameters towards a more flexible approach serving external customers that often lacked design teams with the capacity to develop fully workable prototypes. The plant's first third-party product was a digital set top receiver for the UK market. Subsequent activities tended towards collaborative manufacturing, enabling Pencoed to lever commercially its technological and manufacturing skills.

Both foci helped stabilise the plant, and by 2008 employment had grown to 420 with an additional 140 on site third-party employees (Western Mail, 2008). Yet management was reluctant to expand employment rapidly. It preferred instead to automate processes and use third party manufacturing revenue to offset the fixed costs incurred in manufacturing Sony products. Managing such costs boosted their ability to compete internally for new lines in an environment where 'global localisation' no longer applied as Sony closed its European manufacturing operations. The plant's survival prompted a second five-year plan, for 2011 to 2015, that aimed to build longer-term sustainability. The most high-profile third-party manufacturing contract won during this period was the Raspberry Pi credit-card sized minicomputer (Western Mail, 2015a).

Since the establishment of Sony Bridgend, its significance had manifested itself through frequent awards, official visits and repeated financial support from government. This dynamic continued at Pencoed. The plant won a series of external awards including 'Britain's Best Factory' in 2013 (Western Mail, 2013) while internal recognition included the Sony Production Centre President Award in 2014. By this year employment had grown to 500 and the Prince of Wales visited the factory, 40 years after opening Bridgend. Meanwhile, the Welsh Government awarded grants and loans including those supporting high-definition camera production in 2008, and digitisation in 2015 (Western Mail, 2015b). It also supported an on-site business incubator from 2006, and a training academy from 2012 where it paid half of costs incurred by Sony on each trainee. Finally, by 2015 the government had bought the factory building. All this demonstrates how the plant remained important to policymakers; a Welsh Government minister argued that supporting Sony Pencoed was 'vitally important […] to ensure that we attract and maintain high quality jobs in Wales in support of high value technically advanced manufacturing' (Western Mail, 2008).

In 2016, the importance of long-term relationships and a sense of corporate history was apparent when the senior general manager of Sony's global manufacturing engineering division Yoichi Morita, nephew of its co-founder, and Takeshi Tokita, son of the first Bridgend managing director, visited the plant. Morita stated that 'Wales is a very special place for Sony and my family' while a senior global Sony manager accompanying the pair argued that 'Sony DNA is at the heart of Sony Pencoed' (South Wales Echo, 2016). Moreover, having stood down as Sony leader, Stringer argued in 2015 that the 'factory in Wales has demonstrated how it is possible to survive by being entrepreneurial and imaginative, they have done a remarkable job' (Western Mail, 2015c). By this time, most Japanese plants in Wales had closed, including the 'second wave' factories that supplied components to 'first wave' original equipment manufacturers. Yet Sony remained, albeit in a reduced and remodelled form when compared to its 1990s heyday. Managers compared its post-2005 iteration to a 'destroyer, not a battleship […] we don't have those large juggernaut operations anymore, we have to be nimble, fast, flexible' (Authors' interview with Sony Pencoed management, 14 March 2024).

9. Conclusion

This article contributes to debates on the embeddedness of regional FDI by presenting a case study of Sony's manufacturing in Wales. Our case responds to Meyer et al.'s (2020) identification of the paucity of research within the international business, and by extension the business history, literature on management of subsidiary units and the extent to which they have agency within MNC networks. It examines themes common to two topics. One is branch plants (Firn, 1975; Phelps et al., 2003) where researchers have questioned the role of MNC subsidiaries in UK regions and their long-term contributions. The other is multiple embeddedness (Meyer et al., 2011, 2020) where researchers have explored the impacts of interacting types and components of embeddedness. We ask: what dimensions of multiple embeddedness contributed to Sony's longevity?

We make two arguments as to multiple embeddedness dynamics in relation to the Sony subsidiary. One was external to Sony and was the extent to which it became locally embedded through sourcing supplies and engaging with public bodies. Raising quality standards of local suppliers was necessary to effect the ownership advantages embedded in Sony's production systems focused on producing high quality products. A key element in Sony's success over many decades was public sector support and aftercare. Financial aid was designed to support local sourcing and capital investment during the period of CTV production, before switching subsequently to support skills development at Pencoed. Meanwhile, UK Government officials in Cardiff, London, and Tokyo were mindful of cultural factors important to expatriate management and worked methodically to build relationships. Regional government officials in Wales benefitted from UK Government officials in London, Brussels, and Tokyo collaborating in support of their efforts to attract and retain Sony's manufacturing activities. Crucially, the attention embodied by royal visits and opening ceremonies helped foster a sense within Sony's higher management in Japan that they were appreciated in the UK. Officials understood Sony's sensitivities and were careful to organise a stream of high-profile events. The result was that Sony's 'foreignness' became a distinctive advantage to the local management and generated outcomes that helped them represent their interests within the MNC network.

The other multiple embeddedness dynamic was internal to Sony and was prompted by subsidiary entrepreneurship. Throughout the lifecycle of the CTV plant, local managers formed alliances with public sector bodies to compete successfully against other Sony plants for investment. Managers such as Nakamura were instrumental in winning projects such as the CRT plant and Pencoed. Nevertheless, the Bridgend plant was less successful in hosting research, design, and development. Some such activity was always present but was relatively small in scale. Yet it was the 2005 closure of the Bridgend CTV and tube plants that spurred the most dramatic example of subsidiary entrepreneurship. Pencoed management, most notably Dalton, seised the opportunity to reinvent its operations to focus on newer products and collaborative third-party manufacturing. While the previous business model was based on higher volume but lower value manufacturing dependent on one product, the new approach was characterised by diversified higher value production combined with aftercare within an environment featuring greater local management autonomy.

The success of both dynamics was facilitated by Sony's firm level commitment to embeddedness as symbolised by its distinctive 'global localisation' culture. This culture prioritised the development of autonomous divisions, delegating some decision-making to managers such as Nakamura. They acted on behalf of their subsidiary in a manner far removed from

the traditional conception of subsidiaries as headquarter directed organisations (Ocasio & Joseph, 2005), before emerging as corporate influencers. All this meant that a virtuous circle arose within Sony. Its headquarters encouraged subsidiary entrepreneurship, these entrepreneurs embedded their operations regionally with the support of government bodies, they also embedded themselves within Sony to build their credibility, before acting as entrepreneurs within the MNC to convince senior management that part of their subsidiary operations could and should survive commercially through diversification.

This case study presents learning opportunities for policymakers as to subsidiary entrepreneurship. One focus of FDI debate has been on how geographical distances between parent company and subsidiaries prompted decisions with limited reference to local economic and opportunity contexts. However, a series of factors reduced the impact of distance within Sony helping to prompt its global management to reinvest in Bridgend over a thirty-year period. Even after CTV production ceased, they accepted that local management could attempt autonomously to develop and grow the remaining operations. Yet Sony's trajectory in Wales also reflects the converging regional impacts of two global trends. One is economic integration as the removal of intra-European trade barriers combined with government support for FDI to prompt Wales' emergence from the 1970s as a cost-effective manufacturing location. Deepening integration after 2000 as Eastern European countries acceded to the European Union, however, removed most of these advantages. The other is technological. Sony's proprietary Trinitron CTV technology enabled its market leadership in the 1970s and 1980s, but the company struggled to develop a flat screen successor in the 1990s. These factors ultimately combined to prompt the closure of the CTV and tube plants, albeit after three decades when they provided around 65,000 equivalent job years. Nevertheless, the multiple embeddedness of Sony in Wales enabled its managers to salvage some operations and grow them subsequently. In 2025, the Pencoed factory remains active within third party manufacturing and supplying Sony.

In sum, the case study demonstrates that although FDI is not the all-encompassing regional developmental panacea as presented in the 1980s, neither is it necessarily devoid of a role in improving local economic prospects in the longer term. Such a role can be especially apparent where proactive and largely autonomous regional governments, able to collaborate with their national governments, can engage with partially decentralised MNCs.

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