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Rethinking Bicycle Histories: Rethinking Cycling Histories

Paper prepared for 40th Symposium of the International Committee for the History of Technology, ICOHTEC (Manchester July 22-28 2013)

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Introduction

Bicycle history and historiography is currently undergoing significant reassessment. Historical studies on bicycles and bicycle mobility have been dominated by the legacy of chronologically organised accounts of the bicycle as artefact. While valuable, this approach has had a tendency to elide significant differences between specific histories of the place of the bicycle as a component of broader mobility systems in varying geographical locations. New areas of social and cultural history are combining with colonial and post-colonial analyses to understand both the Eurocentric nature of dominant accounts and the hidden possibilities of multiple and plural narratives. Moving away from an artefactual bicycle history, this study embraces recent developments in the study of technology and draws on use-pattern approaches to the study of bicycle technology.

Shifting focus to a use-centred account and comparing experiences across geographical boundaries reveals substantial differences in patterns and timescales of adoption of the bicycle as basis for mass mobility. By taking a comparative approach to the historical and developmental patterns of bicycle use across varying geographies it becomes possible to isolate the significant factors that may be responsible for shaping cycle use. A comparative use-centred history, placing the bicycle in the context of broader mobility and energy use patterns can enable better understanding of the social forces at work to shape constraints and opportunities, and provides the capacity to interpret the factors at work in the rise and fall of cycle use.

The second part of the paper re-examines patterns of growth and decline of cycle use for transport in a number of locations in order to elucidate the factors which have surrounded important change in cycle use. To briefly summarise the main argument of the paper, the roles and influences of a number of actors in times of modal shift are examined. In particular, consideration is given to the contrasting roles of industry and national economic production regimes; users and non-user groups, with specific reference to the role of symbolic value in respect of cycle use; Public policy frameworks; infrastructural provision; and finally, attention is paid to the relationship between cycle use and the use of other mobility modes. In conclusion, following the arguments of part one, it suggests new ways in which to think about bicycle history, moving away from the dominant periodised model and pointing instead towards mechanisms of change in bicycle usage. The purpose of the paper is to disrupt some of the simplistic and often unexamined assumptions of mainstream thinking about cycle history.

Part One: Theoretical Groundings

One of the first problems encountered when we come to study the bicycle or cycling is that the actual subject itself is often obscure. Although the bicycle appears to be a self-evident object it nevertheless has layers of use and meaning that are not always apparent. Hence the potential schools of academic study that may relevantly be brought to bear on the subject are many and diverse. To study cycling history we can choose from a range of approaches informed by, for example, social studies in technology, transport history, economic history, sports history and the sociology of sport together with disciplines as diverse as engineering and cultural studies. Mobilities as a newly emergent field in its own right further complexifies the matter emphasising the transdisciplinary requirements of study. Each academic tradition has its own legacy and bias, shaping the particularities of its narrative. Moreover, as academics we must be aware that each school has its own disciplinary demands and norms to uphold, and sometimes reputations to defend.¹ Further, we need also acknowledge that whatever discipline and tradition(s) we as academics bring to organise our analysis, the majority of research for the previous century has been contributed by dedicated amateurs outside of the academy. A similar pattern is discernable with railways, other diverse forms of road transport, and aviation.

The turn in studies of technology from a focus on producers (with a distinct bias towards economic history), to a more cultural approach (in which users come to the fore), has been mirrored in cycling studies. A rapid rise in ethnographic accounts of cycling practices has assisted engagement with the policy and politics of bicycling.² Similarly we are beginning to see the emergence of historical studies that also focus on user accounts and experiences.³ Schot and Albert de la Bruheze note the need for a conjunction of production-oriented and consumer-oriented studies for understanding technology and use the two poles of user- and producer-influence to map the agency at work in the social construction of technology. Yet in relation to the cycling and the (bi)cycle we have a third and very important factor at work. As a technology the bicycle is especially dependent upon the space in which to use it and the surfaces on which it is to be used. Just as the bicycle and rider combine to make a machinic combination, this combine cannot exist without the terrain across which to traverse.⁴

Because the bicycle is a technology that operates in and consumes public space, it is constrained within webs of interaction, social and physical. It is also therefore reliant on the infrastructure of public space and the legal governance of that public space in civil society, and of the public interest. These histories reflect existing power relations of land ownership and the mobility expectations accorded to relative class positions. Thus in relation to the consumer and producer we also have a third dimension to consider, that of public space. This comes with its own governance and politics which need to be taken into account in respect of any historiography.

If we consider mobility as a market, then the forces of production and consumption are joined by, and mediated by the political and legal regulation of that market. The

¹ For a parallel example see the emergence of peace studies in Johan Galtung

² See e.g. Dave Horton, Paul Rosen and Peter Cox *Cycling Studies* Ashgate 2007

³ See for example Bernhard Hachleitner, Matthias Marschik, Rudolf Müllner & Michael Zappe (eds) *Motor Bin Ich Selbst 200 Jahre radfahren in Wien* Vienna: Metroverlag & Wienbibliothek im Rathaus, 2013

⁴ In deLuezeian terms the bicycle rider machine connects with the road/ path machine. See Claire Colebrook, *Gilles Deleuze* London: Routledge 2002, p.56f

historiography of the bicycle and of cycling must therefore address the distinction of political differences across a range of territories. To sum a comparative use-centred study of cycling is a conjunction of consumer-, producer and politico-oriented studies. Each of these is a complex of multiple levels of differentiation, and requires us to take into account the classic distinctions of class gender and ethnicity as they bear of the practice, alongside their divergent forms as they related to national and regional distinctions. To summarise, there is a pressing need to go beyond simple narrative accounts of cycling and turn our gaze outward from the bicycle to engage more deeply with the broader contexts in which cycling takes place

Bicycles as transport, Cycling as mobility

The problem we face is that despite the renewal of interest, popular and academic, in bicycles as transport, we still have a relatively poor understanding of the historic place of cycling in transport systems. The commonest model through which to depict the changing fortunes of the bicycle is a periodised history in which a number of epochs can be distinguished. Characteristically, a loose, composite picture of the (European) development of bicycle mobility emerges comprised of a number of distinct phases.

The first phase is that most frequently depicted as characterised by invention and innovation, lasts until the end of the 1880s, and closes with the emergence of the safety bicycle. A European invention, the bicycle is taken up by bourgeois social elites in a number of nations, keen to embrace symbols of a new modernity. Its design, subject to initial contestation reaches stabilisation in the safety bicycle or – using a SCOT perspective – closure. The late 1890s are the ‘boom years’ in which the bicycle becomes an object of desire rather than eccentricity and sees the emergence of new production levels.

Into the next phase at the start of the 20th century, the boom is followed by general diffusion in cycle use from the bourgeois and middle classes across other social classes, ultimately resulting in mass use as an affordable and ubiquitous mode of transport. Thus in 1912, Edwin A. Pratt, in his *History of Inland Transport and Communication* was able to characterise its role thus: “cycles have materially developed the taste for travel; they have led to indulgence in outings or pleasure trips at home and abroad to an extent previously unknown; they have vastly increased the means of communication; they have exercised a powerful influence on our general social conditions, and they have become, in a variety of ways, and with different modifications of the bicycle or the tricycle principle, an important auxiliary to the despatch of business.”⁵ This phase of mass use of the bicycle is seen to last until the years of rapid decline in the 1950s.

However, the virtual collapse of cycle use is then followed by a slow re-emergence from the mid-1970s onwards, primarily in leisure, but latterly as transport . This last period, though less spectacular, has been dubbed a ‘renaissance’ and, though uneven, is at its most visible in the Netherlands, Denmark and Germany.⁶ This renewed use of the bicycle is accompanied by a dramatic increase in its employment as a tool of sport and leisure,

⁵ Edwin A Pratt (1912) *A History of Inland Transport and Communication* [a reprint with an introductory note by CR Clinker, 1970] Newton Abbot, Devon, UK: David & Charles p.473

⁶ See e.g. Pucher, Komanoff & Schimek 1999; Stoffers 2010

reflecting changing patterns of society and the novel bicycle technologies of mountain bikes and BMX. Current growth in cycling as transport is frequently located as an adjunct to this expansion in leisure.

However, this simplified account is problematic on a number of levels. First, it fails to recognise the diversity of historical trajectories in different locations. Although this problem is highlighted in Stoffers, Oosterhuis and Cox (2010), their review of bicycle historiography is still limited to Western Europe.⁷ Territorially speaking, it conflates trends from a different nations into a simplified narrative while the broad outlines may be true (at least for parts of western Europe), greater scrutiny must be applied to the specific patterns within different nations. Without such differentiation, the account risks presenting an image of these patterns of change as somehow 'natural' or evolutionary. Such elision obscures the forces at work. Reintroducing a firm comparative stance allows us to see why changes occur at different times and allows us to begin to uncover the mechanisms by which change is wrought. A comparative stance also takes seriously the non-European histories of cycling, which while tied in through international trade and travel, produces distinct narratives in different territories reflecting individual national fortunes and international relations.

Secondly, a history tied to the identification of specific epochs also introduces an unnecessary teleology. Alongside the 'naturalisation' of the changes, a sense of these processes as inevitable – technologically determined – is reintroduced. This is the very problem that constructionist accounts set out to challenge in the first place. Such stance is problematic on two counts. The first objection is that already mentioned, of technological determinism. The second is more subtle. The Eurocentrism of the narrative, coupled with the degree of normativity it brings to bear as the dominant account of cycling, combine to create this account as a centre to which all other experiences are peripheral and against which the experiences of 'other' users are measured. Rather than simply a point of comparison, it renders non-European experience as somehow deviant from the 'normal' (or proper) history of the bicycle. Here, we can specifically draw upon the insights of post-colonial studies to understand the impact of such a historiography.⁸ The dominant account also renders marginal the diversity of cycle design and use. While always numerically small in relative terms, the production of cargo bikes, tricycles rickshaw, and numerous other designs not conforming to the standard diamond frame, are nevertheless important for the crucial uses of the bicycles and its role in transport systems.

A third objection is that such an epochal account is highly selective, combining events specific to a particular time and place, and shaped by the specificities of their temporal and spatial location into a generalised account. Together, these numerous objections should lead us to question whether a generalised and simplified narrative, although convenient, does not do more to obscure than enlighten. Should a periodised history continue to serve as a convenient narrative structure, or has the moment come for it to be seriously challenged as an heuristic device?

⁷ Stoffers, M. Oosterhuis, H. & Cox, P. (2010). Bicycle history as transport history: The cultural turn. In G. Mom; P. Norton; G. Clarsen & G. Pirie (Eds.), *Mobility in history: Themes in transport* (pp. 265-274). Neuchâtel, Switzerland: Éditions Alphil – Presses Universitaires Suisses

⁸ For a valuable discussion of normalising history with respect to colonial legacy, see Ashis Nandy (2008) *Time Treks: the uncertain future of new and old despotisms* Oxford: Seagull Books pp. viii-xvi.

Modelling bicycle history: users and non-users

To understand use-patterns, it is not only users who are important but also pertinent are the various groups of non-users.⁹ Non-users may comprise those with aspiration to be future users, but may also be social groups of prior users who have now abandoned use. Efforts to turn towards a more global account of the history of cycling have drawn attention to the diversity of historical patterns of cycle usage.¹⁰ While the diversity of contemporary cycle usage across nations is obvious, the significance and extent of differences in the historical trajectories through which they have arrived at these patterns is less well explored.

For example, in the case of the United States, the initial boom of the 1890s was followed by significant collapse of the industry and the bicycles falling out of fashion. While the cycle continued in use through the first half of the twentieth century, this deployment did not translate into use as mass transport. Rather, cycling continued largely as a leisure pursuit and numbers of machines in use exhibited a steady decline. Urban transport needs were met initially by the rapid expansion of mass-transit systems, and latterly by the use of the automobile. These developments are further linked with different patterns of demographic distribution, urban growth, and population densities.

By contrast, in Japan, bicycles also appears on the streets very early, but there is minimal evidence of an 1890s boom and bust cycle. The state of manufacture in the 1890s was insufficient to have supported such a phenomenon.¹¹ Rather, there is a pattern of comparatively steady growth in use through the 20th century, perturbed by a number of periods of rapid growth and decline arising from external events, in particular warfare (and its cessation). Neither was the European pattern of decline in the 1950s particularly visible but, as Steele demonstrates, even during the greatest periods of rising car use cycle use also continued to grow. Consequently Japan continues to have one of the highest levels of global cycle use in the first decade of the 20th century.¹²

In order to understand why the same technology was used so very differently, it is valuable to take a slightly different approach to the problem, shifting focus to a comparative, use-centred account. By providing a comparative study, distinctions can be made between territories and within them, between varying user (and non-user) groups. This allows us to question the mechanism that may account for changes in use and users. Even in Europe, where the conventional periodization is most defensible, we can explore how changes occur with different timescales in different territories. Not only use-patterns differ, but the relationship of the bicycle to other forms and practices of mobility can be markedly different. By taking a comparative approach to the historical and developmental patterns of bicycle use across varying geographies it becomes possible to isolate the significant factors that may be responsible for shaping cycle use. A comparative use-centred history, placing the bicycle in the context of broader mobility and energy use patterns can enable better

⁹ Sally Wyatt, "Non-Users also Matter: The Co-Construction of Users and non-Users of the Internet," in *How users matter: the co-construction of users and technology*, ed. N. Oudshorn and T. Pinch (Boston, 2003), 67-80

¹⁰ See e.g. Ian Boal, "Towards a World History of Cycling" in *Proceedings of the 11th International Cycle History Conference* ed. A. Richie and R. Van der Plas (San Francisco, 2001); Steele, M. William (2010) *The speedy feet of the nation: bicycles and everyday mobility in modern Japan* *Journal of transport History* 31 (2) 182-209

¹¹ Steele, M William (2010) *The speedy feet of the nation: Bicycles and everyday mobility in Japan* *Journal of transport history* 32 (1)

¹² Steele, M William (2012) 'The Making of a Bicycle Nation: Japan' *Transfers* 2 (2) 70-94

understanding of the social forces at work to shape constraints and opportunities, and provides the capacity to interpret the factors at work in the rise and fall of cycle use. In turn, comprehension of causal factors that shape past trajectories of use may provide better a basis for future policy and planning interventions.

Unpacking the changes in use patterns and user (and non-user) groups enables examination of the transition between periods – i.e. modal shift. It is therefore also pertinent to incorporate the use-patterns of other technologies that compete for the same meaning-sets in order to understand emergent meaning and use-patterns of the bicycle. It is further worth noting that the changes of bicycle use and users may also reflect other broader changes in mobility, not just those arising from technological innovation. Both volumes and distances of travel have undergone considerable changes across the twentieth century. Whilst some of these are direct reflections of the affordances of different transport modes becoming available at different times (technologically determined) some of them may also be reflections of demographic and planning changes, developments of infrastructures and other technologies, and of social changes including relative disparities in incomes and rising standards of living.

Conclusions

This first section has raised objections to existing ways of thinking about cycling history and begun to suggest broader contexts in which to rethink how we might approach the detail and complexity of different historical analyses. Thus I argue for an increase in historical studies of cycling practices using as many different tools of analysis as possible in order to come to a better understanding of the plurality of cycling histories and of the role of agency in change. The following section of the paper is intended to give some hints towards how such an approach may be undertaken. The examples are from both widely available published sources and some from original research. It is not intended to take away from the invaluable work of primary authors but to bring together existing studies to provide comparative perspectives and to reconceptualise some data from previously less considered angles.

Part 2: case studies and examples

Boom-bust cycles, modernity and industrial capitalism

The fortunes of the bicycle during the 1890s are frequently characterised by descriptions of the rapid expansion of production and soaring rates of use, during which the solo bicycle was heralded as a signifier of modernity. Where the boom occurred, it was an object of conspicuous consumption, displayed and used in public by a newly confident upper middle class. Ownership reflected the possession of considerable social capital by its users. As Veblen (1899) wrote in describing the general boom of consumer goods in the USA, “goods which contain an appreciable element of cost in excess to what gives them serviceability for their ostensible mechanical purpose are honorific”.¹³ The mobility provided by the bicycle was by no means necessary, indeed, it fell itself into the realm of a luxury good, fitting with

¹³ Veblen, T., (1899) *The Theory of the Leisure Class* [Dover reprints series] p.94

the new desire for touristic travel. Given this emphasis Pratt's (1912) statement quoted above is more reasonable as pointing towards the increase of luxury travel afforded and the adjunct to business alluded to as opening new possibilities for trade, not for individual worker mobility.

The bicycle's viability as a symbol of modernity was, however a fragile commodity, largely dependent on its position as the most recent mobility mode.¹⁴ Automobiles, powered by electricity, steam or internal combustion power plants very soon offered an even more visible means of mobility display, with the advantage of even greater exclusivity; maintaining, even reinforcing the social order for the proud owner who could employ a chauffeur. While the utility of the bicycle as a means of transporting goods and persons together with basic luggage was visible to writers of the 1890s, it should also be noted that machines were generally not retailed on that basis at that time either in the UK or the USA.¹⁵

The boom/ bust pattern was most extreme in the USA where it was fuelled by the innovation of mass production and attempts at monopolisation of the trade by the Pope manufacturing company. Although Norcliffe (1997: 269) describes Pope as being "well poised to benefit from the bicycle craze of 1895-97", it can be seen that the introduction of new manufacturing processes during the preceding years, replacing the previous forms of batch production, were a significant factor in enabling the boom to occur. Equally dramatic was the collapse of the industry after 1897. Gross over-production and a saturated market led to a collapse which was only partially mitigated by exporting surplus at lower cost to Europe. The scale of this shift is indicated by the rapid changes in US cycle exports to Europe which, in 1895/6, amounted \$1,898,012. The following year this rose to \$7,005,323 and in 1897/8, \$6,846,529. One third of these went to England.¹⁶ Thus it can be seen that surpluses created in the USA as a result of a very particular form of capitalism were exported to Europe where they assisted in fuelling expansion in European use to a broader middle class group than had otherwise been able to afford locally produced cycles.

Even with surplus production capacity after the turn of the century the bicycle never attained a role as mass transport in the USA. Paul Rubenson identifies the use of cheap but impractical single tube tyres as one factor.¹⁷ The legacy of Albert Pope's attempted monopolisation of the US cycle industry during the 1880s had its parallel in further attempts to monopolise the cycle industry in the American Bicycle Corporation (1899-1903), also chaired by Pope.¹⁸ The dismantling of the ABC and the transfer of its assets into the Pope Manufacturing Company, and the attendant financial problems of that company were not conducive to creating a new market for bicycles as transport. Bicycles promised only low margins and little of the captive lucrative accessory trade visible in the car market, to which

¹⁴ Ameye, Thomas; Bieke Gils and Pascal Delheye. 2011. "Daredevils and Early Birds: Belgian Pioneers in Automobile Racing and Aerial Sports during the Belle Époque." *The International Journal of the History of Sport*, 28, no. 2: 205-239. DOI: 10.1080/09523367.2011.537911

¹⁵ Albermarle, The Right Hon. The Earl of, and G. Lacy Hillier *Cycling*. [New edition Thoroughly Revised 1895, reprinted with amendments 1896] London and Bombay: Longmans, Green & Co., 1896

¹⁶ Harrison A. E. 1969. "The Competitiveness of the British Cycle Industry, 1890-1914." *The Economic History Review* [New Series] 22 (2) 287-303, 29-2

¹⁷ Rubenson (2005) "Patents profits and perceptions: The single tube tire and the failure of the American Bicycle 1897-1933 in van der plas (ed.) *Cycle History 15 Proceedings of the 15th International Cycling History Conference, Vienna 1-4 September 2004* San Francisco: Van der Plas books

¹⁸ Epperson (2000a, 2005)

the company was committed through its production of the Columbia Electric Car.¹⁹ Throughout his enterprises, Pope's consumer target group was firmly identified as the affluent urbanite, the emerging clerical and administrative classes and Pope's consistent strategy through his diverse enterprises was to establish complete control in one area and ensure the maintenance of profit margins either through patent control and price fixing, or by slashing production costs when patents were no longer valid.²⁰ As Norcliffe notes, Pope himself explained to *The New York Record*, 17 July 1894 "bicycle prices will drop when the patents run out, as did the price of sewing machines."²¹ American urban transport needs were well served by the proliferation of a dense network of tramways, despite their reputation for poor quality and service.²² Despite some attempts to revive the US cycle industry from 1906 onward, 1909 marked a low-point of production. This was also the time that Japanese indigenous manufacture was beginning to take off, and as Continental Europe was moving towards mass use, requiring more affordable machines, emphasising the USA's isolation from trends elsewhere. As Herlihey (2004) indicates, hopes were still rooted in the bicycle as a luxury machine, alongside very different designs for delivery machines to be used by workers for the employers' business, but not as their own personal transport. The divorce between these two fields is still visible a century later.²³ One relevant factor in understanding the formation of the bicycle market and the social practices of cycling in the post-1900 era is the organisation of labour. Although the US could boast relatively high wages in skilled industry, the broad masses of labouring classes were weakly organised and poorly paid, and attempts to organise were actively discouraged (as discussed below).²⁴

In the UK, the bicycle boom did not fundamentally transform the industry, which continued to rely on high price and high margin sales. In France and Germany, by contrast, it "stimulated the expansion of the indigenous cycle trades and put them on a more satisfactory commercial and technological footing".²⁵ Canada, Australia and New Zealand were directly linked by their positions within the British Empire and as in the mother country, the bicycle provided an importance means to demonstrate fashionable status. Evidence also points towards the growth of much stronger local markets and local production, and here the bicycle visibly began to provide more utilitarian transport.²⁶ But the end of the boom did not see automatic translation of the bicycle from toy to transport. Indeed the immediate aftermath of the bicycle boom in the UK was also co-incident with the significant expansion of municipally-owned electric tramways.²⁷ The expansion of mobility demand and fulfilment of large numbers of people in Europe and in the USA after the bicycle boom was in general

¹⁹ Pope, Albert (1995) provides a useful but somewhat uncritical background based on family papers. For detailed coverage on Pope's involvement in the electric vehicle industry and its parallel attempts to create a monopolistic trust, see David A Kirsch 2000

²⁰ Epperson 2000b . The exclusive focus on affluent middle class identity and values in the marketing of bicycles in the United States during the nineteenth century is further emphasised by Petty 1995

²¹ Norcliffe 1997

²² Filarski, Ruud (2011) *Shaping Transport Policy* Den Haag NL SDU 78-9

²³ Herlihey 2004: 317

²⁴ See e.g Fred W Thompson and Jon Bekken *The Industrial Workers of the World: Its first Hundred years 1905-2005* IWW Cincinnati 2006 or Howard Zinn *A people's history of the United States* 1980 and Zinn and Arnove (eds) *Voices of a People's History of the United States* 2004

²⁵ Harrison 1969: 288

²⁶ For details on New Zealand see Toohy 2010. On p.124 he points specifically to an entry from the *Poverty Bay Herald*, (7 February 1896, 4) entitled "The Bicycle Boom". See also Lehr, John C. & Selwood, H. John, (1999) "The Two-Wheeled Workhorse: The Bicycle as Personal and Commercial Transport in Winnipeg", *Urban History Review* 28(1): 3-13

²⁷ Though late by international comparison, this was due to the maturing of the municipal purchase rights established in the Tramway Act of 1870 (Filarski p74)

more a function of tramway growth than of any fundamental change in cycle use or of an opportunity which the bicycle was mobilised to fill.

What did change after 1898 was that the bicycle was no longer such a rapidly changing novelty. Design features quickly stabilised, with one year's model virtually indistinguishable from the last.²⁸ This standardisation of the type form simultaneously marked a decline in prestige and made a continuing second-hand market viable. The bulk of sales was also dominated by roadster types from this point on, not of racy or sporting models. Together these factors point towards the bicycle's new role as middle class transport. The bicycle boom, as with other rapid expansions in the growth of other consumer products, is less a factor of the particular technology than of the socio-economic situation itself: production capacity must coincide with the availability of surplus income in a sufficiently large section of the population. Thus it is a function of a particular form and organisation of capital. A constant trade-off occurs between exclusivity and desirability in the spread of (relatively scarce) consumer goods, and we should recognise the efforts of the trade in Britain to maintain their monopoly cartel and prevent the sale of bicycles at cheaper prices in this light.²⁹ Comparing bicycles with other twentieth century consumer goods we can see parallels to other initial surges in popularity followed later by mass adoption. With mass adoption however, comes a lowering of the social cachet attached to the good itself, as ownership moves across social classes. To understand bicycle adoption (and non-adoption) by the working classes in industrial capitalist societies, we need to look in more depth.

The bicycle as an adjunct of Business

A corollary of the expansion of solo bicycle production and use in the 1890s was intense lobbying by manufacturers to further increase the potential applications of their novel product. The utilitarian possibilities of cycles had been recognised almost since their inception. During the era of the ordinary (high wheel bicycle) numerous attempts to create a variety of designs had been built and tested specifically adapting the mechanical principals towards practical uses, (for example the hen and chickens model for the British post office). If the high bicycle was seen as a generally male domain, the search for a cycle more suitable for the locomotion of society ladies – not to be seen mounting a high bicycle in polite society - gave rise to a number of tricycle designs. In turn, these were far more easily adapted to the carrying of goods as well as persons.

In order to create new markets for cycles, while preserving the desirability of the diamond framed safety bicycle as a plaything for the bourgeoisie during the 1890s, manufacturers in Europe and America demonstrated new uses for pedal vehicles amongst different user groups. In the USA, trade papers of the 1890s reveal a growing range of bicycle designs to facilitate goods carriage and act as trade delivery and advertising simultaneously. A few years later, Albert Pope "advocated the use of bicycles to conduct several public activities including policing, fire protection, post and telegraph delivery".³⁰ Similar applications were envisaged in Europe, ranging from the example of the of a human powered fire crew transport (1899) by Dressler and Co to the complex multi-person cycle design of the the

²⁸ Oddy, Nicholas (2007) 'The Flaneur on Wheels?' in Horton D, Rosen P & Cox P (eds.) *Cycling & Society* Aldershot: Ashgate, p25-46

²⁹ See Pinkerton on details of the prosecution of the crane Brothers

³⁰ Norcliffe 1997:82

Marschütz Ambulanzwagen.³¹ If the 1890s are to be regarded as the period of stabilisation of the safety bicycle as a design, they should also be understood as simultaneously a period of diversification where the technologies of the safety bicycle are deployed in increasing diversity of design for goods carriage.

However, human-powered options for such transport uses are restricted by weight limitations. Vehicles requiring multiperson power sources were rapidly being rendered obsolescent by the emergence of motor traction for those functions. For example, almost at the same time as the Marschütz cycle ambulance, was demonstrated, Heinle und Wegelin constructed a motor-tricycle and trailer for the same purpose.³² As the infrastructure for internal combustion engine vehicular mobility became widespread, alongside the increasing reliability of engines and drivetrains, the value of cargo bikes became clear, not for every role but for a significant number of journeys.³³

For urban deliveries, replacing functions formerly served by handcart traffic, utility tricycles and carrier bicycles of numerous designs proved their longstanding practicability. Much of their advantage over either motorised forms or animal traction arises from their capacity for immobilisation. The constant stop-start of postal or other doorstep deliveries of relatively lightweight goods, and mobile sales, give human powered vehicles a consistent for over a century, largely unchanged. And unlike animal traction, feeding and watering the motive power need not necessarily be the responsibility of the employer.

Design of workbikes, unlike the solo bicycle, remained localised and diverse, reflecting small scale manufacture to specific purposes. As an example, in Paris, the newspaper industry used bicycles as a means of distribution from the 1890s, even organising annual races as a further means of publicity.³⁴ By the turn of the century, two and three wheeled delivery tricycles (bi-porteurs and tri-porteurs) were also being used (and still were being raced until the 1960s). Delivery tricycles have been developed wherever bicycles are in use and their design simply depends on the particular needs for which they are constructed. Their changing fates during the latter half of the twentieth century are closely tied to the changes in the retail industry. The rise direct in-shop sales and of latterly the supermarket removed the need for retail delivery services but the cargo bike then was re-invented as a consumer-owned device.³⁵ Today's restructuring of the retail sector in light of the changes brought about by the advent of internet sales is bringing about renewed interest in localised logistics and the emergence of new corporate fleets of delivery cycles.

Overall, however, the most undoubtedly important form of non-solo cycle is the cycle rickshaw. Mating the mechanical efficiency of the bicycle with the passenger- or goods-carrying trade of the rickshaw the cycle-rickshaw rapidly became emblematic of transport across South Asia in the 1930s and continue in a variety of local variants to the present.³⁶

³¹ Kielwein and Lessing 2005: 140

³² Kielwein and Lessing 2005: 150

³³ Kielwein and Lessing 2005:177

³⁴ The Criterium des Porteurs de Journaux, first run (in both mens and women's editions) in 1895. See www.blackbirdsf.org/courieracing/journaux.html

³⁵ For a full discussion of the changing fortunes of cargo bikes, see Peter Cox & Randy Rzewnicki (forthcoming)

³⁶ See Gallagher (1992), Wheeler, Tony and l'Anson, Richard (1998) *Chasing Rickshaws* Hawthorn, Victoria, Au: Lonely Planet; Cox 2010 *Moving People: sustainable transport development*, London Zed

Although important, rickshaw studies have been relatively rare until very recently, A special section of *Transfers: interdisciplinary journal of mobility studies* in 2013 has begun to mediate this lacuna but there little extant systematic study. Why the rickshaw has been so consistently overlooked not only in transport studies but in bicycle studies may have something to do with its status as an autonomous product of the modern knowledge of the semi-periphery.³⁷ One of modernity's distinguishing features is that technological advance is presumed to be an exclusive quality of the metropolitan centre, since that is the very reason for the imperial centre's advantage over its 'other' territories.³⁸ That the periphery, or even semi-periphery, may be the origin of a 'better' or 'more useful' or 'appropriate' technology is almost unthinkable. Indeed, it is a contradiction in terms. This relationship is continued in the post 1948 concept of 'development' which is predicated on the technological obsolescence of the 'underdeveloped' vis-a-vis the 'developed' world.³⁹ Dubey's study of rickshaw in India employs a similar analysis to try to understand both its persistence and its constant denial and attempts at suppression by governmental authorities.⁴⁰ Ambiguously trapped between modernity and obsolescence, this same problem that has isolated knowledge of rickshaw is also characteristic of the bicycle in the today's transport analyses.

Cycle transport is complicated not only by being shaped through colonialist discourse, but also through the more conventionally recognisable categories of difference of class and gender.

Socialism and class struggle: the bicycle as a tool of appropriation or conciliation.

What made the bicycle such a desirable commodity in Europe during in the boom years was its clear potential for more universal distribution of social goods through the access granted by increased mobility. Across Europe, wherever there were societies of organised labour, the advent of socialist bicycle clubs was not far behind. The success of such societies, their ability to ensure supply of machines at affordable prices to desiring non-users correlates with the relative strength of organised labour, varying between locations. The clearest and strongest example is to be seen in Germany.

The corollary of the anti-socialist legislation passed in Germany from 1878, originating in fear of enfranchised labourers, was the legitimisation of the role of the state to ensure policies designed to "heal the wounds of modern society".⁴¹ If the role of welfare legislation was to forestall insurrectionary activity, the provision of transport networks and systems as further means by which to promote social inclusion and cohesion can be seen as a direct part of this same process. Hence the expansion of electric tramways in Prussia from the 1880s can be seen as a direct expansion of a transport system aimed at the inclusion of workers (especially more independently minded white-collar workers), expanding into the mobility sphere state interventions first seen in relation to more conventional forms of social security.

³⁷ This idea is developed at length in Boaventura de Sousa Santos (2004?) *Reinventing Social Emancipation* in Santos (ed.) *Democratizing Democracy* pp.xxiiff

³⁸ C.f. Feminist critiques of technology, e.g. Leonard, Eileen B. (2003) *Women, Technology and the Myth of Progress* Upper Saddle River, NJ, USA: Prentice Hall

³⁹ See Gilbert Rist *The History of Development: from Western Origins to Global Faith* [3rd edition] London: Zed 2008

⁴⁰ Dubey, Abhay Kumar (2007) 'The Rickshaw Refuses to Go Away: The Struggle of the Co-Traveller of Asian Modernity' in Ravi, Rajendra (ed.) *The Saga of Rickshaw: Identity, Struggle and Claims* New Delhi: VAK 29-65

⁴¹ Barmayer, Heidi 2002. "Bismark and the origins of the Modern Welfare state in 19th century Germany." in Jensen, Henrik (ed.) *The Welfare State. Past, Present, Future* Pisa Editizioni Plus – Università di Pisa . p.98

The repeal of the anti-socialist combines act in 1890 saw the rapid growth in number and strength of organised labour.⁴² An important element of the work of unionisation was the creation of cultural and sporting organisations, of which the cycling club *Solidarität*, the Worker's Cycling Organization (1896) was an important part.⁴³ Yet the initial use of the bicycle by its 130,000 members was not primarily as quotidian transport but rather as a claim to privileges previously exclusive to the bourgeoisie: a form of emancipation. As Ebert argues, even this "appropriation by a large group of society, i.e. the working class, did not automatically result in its recognition as an important mode of transport and the incorporation in to a national framework".⁴⁴ It did, however, provided the mechanism of transition from cycling as an elite activity to a more generalised one.

In Britain organised union activity had far less structured engagement with the political process, and relatively little power. There were indeed socialist cycling clubs, and the National Clarion Cycling Club, uniting the various local Clarion clubs (named after the title of Blatchford's weekly socialist newspaper and which had propose their formation) provided a signal demonstration of the potential of organisation. Nevertheless, they remained relatively small in number compared with their German counterparts, and even in Britain itself, their numbers were overshadowed by the membership of the Cyclists' Touring Club, which maintained a more firmly bourgeois stance and firmly opposed to the Clarion.⁴⁵ Additionally, the Cycle trade maintained an effective cartel on sales, restricting prices and vigorously pursuing those seeking to lower prices to a level affordable by a the majority of labourers.⁴⁶ Consequently, cycling in the UK was not truly to become a mass activity until after the First World War.

The success of Danish workers organisation in the political sphere at the turn of the century was also paralleled in the rise of socialist cycling organisations.⁴⁷ Early Danish socialist cycling clubs (e.g. the ABC – Arbejdernes Bicykle Club – formed 1895 and still going) may have been rooted in urban milieux, dominated by Copenhagen, but bicycling did not long remain limited to urban regions given the geography of the country. By 1930 a third of the population of Copenhagen were reckoned to move by bicycle.⁴⁸ So essential was the bicycle to general mobility throughout the country, that during the occupation a decade later, German sources were at pains to deny rumours that bicycles were to be confiscated.⁴⁹ Cycles remained in widespread use by civilians as well as by the authorities through the war years.⁵⁰ It was insisted that they should remain available as lack of mobility would have jeopardised agricultural production levels with workers would be unable to reach their work.

⁴² Geary, Dick. 1989. "Socialism and the German Labour Movement before 1914." in Geary, Dick, ed. *Labour and Socialist Movements in Europe Before 1914* Oxford: Berg: 101-136

⁴³ Rabenstein, Rüdiger. 2001. "The History of German Workers' Cycling Association, Solidarity." in *Cycle History 11: Proceedings of the 11th International Cycle History Conference* San Francisco: Van der Plas Publications: 160-168

⁴⁴ Ebert, Anne-Katrin. 2004. "Cycling towards the nation: the use of the bicycle in Germany and the Netherlands, 1880-1940." *European Review of History* 11, no. 3: 347-364 p.349

⁴⁵ For a full exploration of these issues, see Cox, P (forthcoming 2012) *The co-construction of cycle use: reconsidering mass use of the bicycle in Oldenzien*, Ruth (ed.) *Re/cycling histories* Oxford: Berghahn Books

⁴⁶ See Andrew Millward, "The Founding of the Hercules Cycle and Motor Co. Ltd," in *Proceedings of the 5th International Cycle History Conference, Cambridge, England September 1994*, (San Francisco, 1995)

⁴⁷ A. Hoffman, "Arbejderidrættens Forhold til Socialdemokratiet ca 1880-ca 1925," *Arbejderhistorie*, 2008, no.1 (2008): 96-115. For ABC see www.abc-cykling.dk.

⁴⁸ Herlihey 2004 p.328

⁴⁹ Information from archives at Museum of Danish resistance 1940-1945, Copenhagen

⁵⁰ Even to the extent of the organisation of a 'Pedal Exhibition' in September 1941

The only limitation was the shortage of rubber for tyres, a situation similarly problematic in all occupied territories.

The importance of organised workers movements in the spread of cycling is two-fold. First through the spread of desire, for the democratisation and diffusion to all classes the mobility and access previously afforded to only a privileged few. Secondly, in practical economic terms, the successes of workers in ensuring wage increases and the breaking of sales cartels were required in order to make the bicycle an affordable commodity. But if socialist organisation facilitated bicycle use in Germany and Denmark, it was precisely its antithesis that provoked the growth of cycling in the Netherlands.

Examining the rapid and early adoption of the bicycle as a primary mode of transport in the Netherlands reveals the extent to which Dutch exceptionalism is the product of a number of unique political forces. For pillarised elites, at the end of the nineteenth century the actions of the ANWB to portray the bicycle as an acceptable vehicle enabled them to unite in proposing its adoption as the means by which, simultaneously, the threat of socialist unrest could be calmed and civic virtue and liberal values promoted: "Cycling was being presented as a way to promote 'traditional' Dutch virtues, i.e. independence, self-confidence, self-control, balance and consistency, which needed to be preserved and reasserted in a changing world".⁵¹ National Cycling Policy in the Netherlands can be interpreted as a means by which to incorporate a nascent self-conscious working class into the bourgeois state by ensuring access public goods. McGurn, drawing on a 1923 Jubilee publication of the ANWB observes that cycle roads in the Netherlands were seen as a means by which the rural hinterlands could be better incorporated into the modern nation state: they were a means by which to spread education and increase social intercourse.⁵²

The construction of cycle paths – more properly, cycle roads – newly constructed in rolled macadam, in the Netherlands is thus a unique corollary of a political response from social elites to perceived threats of socialism. Existing road and path networks could not be practically promoted for this purpose because of the predominance of brick and gravel surfacing, neither of which are particularly suitable for bicycle traffic, unlike the macadamised surfaces, asphalted or not, that predominated in Britain.⁵³ That transport could be understood as an area for legitimate state intervention also depended on other political preconditions. Canals and roads were already state construction ventures in the Netherlands, another profound contrast with the laissez-faire conditions in Britain where responsibility was entirely devolved to local authorities. Dutch neutrality during world war one, whilst disrupting trade and isolating the country, did allow for greater social continuity and it is not surprising that we see the Netherlands characterised as a cycling nation by 1921, with European levels of use only rivalled in Denmark.

The transition to mass use of the bicycle, and of cycling from an exclusive bourgeois pastime to a means of everyday mundane mobility was by no means 'natural. Ebert (2004) describes the transition as a "general diffusion" arising from a "trickle-down process". Yet even her study shows that very specific mechanisms can be seen to account for very different

⁵¹ Ebert 2004: 356

⁵² Jim McGurn, *On Your Bicycle* (York, 1999)

⁵³ See Cox (forthcoming) the co-construction of cycle use; G. Mom, "Inter-artifactual Technology Transfer: Road Building Technology in the Netherlands and the Competition Between Bricks, Macadam, Asphalt and Concrete," *History and Technology*, 20 no. 1, (2004): 75-96; Gijs Mom, "Road Building in the Netherlands , 1810-1980," in *Road history: Planning Building and Use*, ed. G. Mom and L. Tissot (Neuchatel, 2007)

meanings of the bicycle in Germany and the Netherlands. Taking further international examples we can see in more detail that a complex of forces are at work – social political and economic. The common characteristic however, in all but the United States is that by the 1930s the bicycle was the most numerous vehicle on the roads. A few examples can provide indication of the varied routes by which this position was reached.

Cycling In the years of dominance

Growth of bicycle use in Japan, as elsewhere, is very closely related to the growth of industrial early manufacturing capacity. Although the first Michaux type (front-driver) velocipedes were imported in the late 1860's, the simultaneous development of the jinrikisha, the human pulled rickshaw, provided the urban transport revolution while bicycle design was going through its developmental stages.⁵⁴ When John Foster Fraser wrote his account of travelling through Japan in 1899, he commented on the popularity of clearly home-made machines in Nagoya.⁵⁵ These were scooted rather than pedal driven, reflecting the limited capacity of local production at the time. Conventional bicycles in his encounter were the imported preserve of Americans and Europeans. Some local production was initiated alongside assembly of imported machines, and *The Wheel* reported that the first Japanese bicycle export was a shipment of six machines to Russia in 1894.⁵⁶ Scare stories circulated in the US cycling press about the imminent threat of Japanese production during the boom of 1896, but these proved groundless.⁵⁷

Cycling clubs, under the patronage of prominent local citizens organized after the turn of the century provided the incentive for more sophisticated local manufacture, but only after the end of the Russo-Japanese war (1905) did indigenous manufacture begin to take off in any volume.⁵⁸ But local production, supplemented by assembly from imported parts and of imported machines, was soon able to provide sufficient numbers for the bicycle to become a serious modal component of the transport fleet.⁵⁹ Ownership increased by as many as 200,000-500,000 per annum after 1910 and a Tokyo traffic survey of 1925 listed bicycles as accounting for 2.4 Million out of a total of 4.4 Million registered vehicles.⁶⁰ By 1925 domestic production amounted to 90% of total cycle sales. By 1930 total numbers were over 5M, with over 8M in 1940 as compared with a pre-war motor vehicle fleet peaking at 50,994 vehicles

⁵⁴ M William Steele 2010

⁵⁵ John Foster Fraser *Round the World on a Wheel, Being the narrative of a Bicycle Ride of Nineteen Thousand Two Hundred and Thirty-Seven miles through Seventeen Countries and across Three Continents* by John Foster Fraser, S. Edward Lunn and F. H. Lowe (1899){1982 reprint} London: Chatto and Windus. David V Herlihey (2010 *The Lost Cyclist* Edinburgh: Mainstream) recounts similar impressions gained by Frank Lenz cycling through Japan in 1892.

⁵⁶ *The Wheel and Cycle Trade Review* May 18 1894 p. 44

⁵⁷ *The Wheel and Cycle Trade Review* Jan 31 1896 p. 94

⁵⁸ The similarity between the industrial production processes necessary for handguns and bicycles should be noted here, e.g. BSA (Birmingham Small Arms) becoming an important cycle manufacturer in Great Britain and the Miyata firm in Japan similarly began as a gunsmiths. See Tsuneyoshi Takeuchi (1991) *The formation of the Japanese Bicycle Industry: a preliminary analysis of the infrastructure of the Japanese Machine Industry* [Working paper HSDRJE39/UNUP-241] Tokyo: United Nations University).

⁵⁹ The establishment of local manufacturing capacity was relatively slow by international terms see Takeuchi, Johzen (1991) *The role of labour-intensive sectors in Japanese industrialization* Tokyo: United Nations University Press. Bicycle export in the form of CKD (Complete Knock Down) for assembly in the importing nation remained an important feature of the international cycle trade, and enabled bulk exports as well as a means to avoid import taxes in some cases

⁶⁰ Saito, Toshihiko (2001) *The Bicycle and transportation Policy in Japan* in *Cycle History 11: Proceedings of the 11th International Cycle History Conference* San Francisco: Van der Plas Publications pp.72-80: 76

in 1937.⁶¹ Bicycle production in the 1930s was not only for domestic consumption. From a position where the industry had originally been almost exclusively one of import and assembly, by the mid 1930s Japan was exporting machines through India, China and Southeast Asia, including Australia.⁶² Only through restrictive regulation were Japanese cycles kept from the British market

In Switzerland, numbers of bicycles in use could be calculated relatively accurately because of the necessity of licenses. Bicycle use remained relatively limited pre-1914, but expanded steadily through the 1920s. The early 1930s saw an almost complete stagnation, corresponding to the prevailing economic climate, but had more than recovered by 1934-5. The growth in number continued to increase through the latter years of the decade with automobile use remaining almost stagnant. In 1941 over 150,000 new cycle registrations were counted while car numbers fell by 50,000, but both modes remained relatively static until after the end of the war.⁶³

In post-First World War Britain, the firm of Hercules was established with specific intent to supply affordable bicycles for the masses and rapidly became the largest manufacturer, a move that signalled an irrevocable change in the industry. However, the bicycle also became even more powerfully identified as a symbol of class difference, especially in the aftermath of the general strike in 1926.⁶⁴ Although having the highest car use in Europe, the car in Britain nevertheless remained the province of the wealthy middle classes and social elites. Indeed manufacturers' lower cost cars did not sell well.⁶⁵ Class divides between cyclists and motorised road transport users was played out in rising levels of conflict, as road accident rates rose dramatically through the latter part of the 1920s. The rise in casualties became a subject of national public and media concern, but the ownership of the mass circulation newspapers was the province of the far right (Beaverbrook and Rothermere), ideologically committed to the expansion of private motoring. Thus the problem of road deaths was overwhelmingly presented as one caused by the presence of the bicycle and logically solvable by their removal. The Press owners were also closely connected politically with motor manufacturers such as Nuffield and public figures such as the racing driver Malcolm Campbell through their sympathy for far right politics, the British Union of Fascists being the strongest public advocates of motorway construction i.e. building new roads exclusively for motor traffic.⁶⁶

In Britain in 1926, 1,715,000 motor vehicles were registered and 4,886 road fatalities recorded. Few were counting bicycle numbers. In Parliament, estimates of approximately 10 million users were accepted as a fair estimate – the total population being some 46 million. Yet reading accounts of the period it is clear that numerical superiority made little impact on

⁶¹ M William Steele (2010) The speedy feet of the nation: bicycles and everyday mobility in modern Japan *Journal of Transport History* 31 (2) 182-209

⁶² Fitzpatrick, Jim (1998) *The Bicycle In Wartime, An illustrated History* Dulles Va, USA: Brassey's p.132-3

⁶³ Swiss data from Benedikt Meyer (2008) *Vorwärts, Rückwärts. Baisse und Renaissance des Fahrradfahrens in der Schweiz 1960-1980* Unpublished thesis, Historisches Institut Uni Bern

⁶⁴ Cox, P. (2012) "A denial of our boasted civilisation": Cyclists view on Conflicts over Road Use in Britain, 1926-1935 *Transfers* 2(3) 4-30

⁶⁵ See O'Connor, Sean (1998) *The Car in British society: Class Gender and Motoring 1896-1939* Manchester University Press, especially chapter 1: 'By their cars ye shall know them': class, status and the spread of car ownership

⁶⁶ Zander, Patrick G (2009) *Right Modern: Technology, Nation and Britain's Extreme Right in the Interwar Period (1919-1940)* (unpublished PhD thesis, Georgia Institute of Technology and Science)

the experience of riding.⁶⁷ Many felt embattled and outmanoeuvred by hostile motoring forces. Despite rapid rises in casualties, stabilising between 6,500 and 7,300 in the decade from 1929, concerted opposition campaigns were mounted by a variety of cyclists' groups against the introduction of compulsory rear lights, centring on the argument that it should not be the victim's task to guard against an oppressor. Parallel campaigns were mounted against the introduction of segregated cycle paths, since these were seen to remove the cyclists' long-established and hard earned right to be on the road. Fears were also voiced that such infrastructure would be inferior in quality, relegating the cyclist to the condition of second class traveller – a position vindicated by those that were built.

During the 1930s in Germany, accompanying the construction of motor traffic only highways, a number of high profile restrictions on cycling were enacted. The construction of cycle paths was advocated for the explicit function of removing cycles from the highways in order that they should be less of an impediment to motor traffic.⁶⁸ But it must also be recognised that Germany remained at a significantly lower level of car ownership than France or Great Britain in 1938.⁶⁹ Despite the headline embrace of motorisation, the reality was a continued reliance on other forms of mobility. With relatively high bus prices, this meant a continued reliance on bicycle traffic. Indeed bicycle manufacturers such as Torpedo responded to neo-corporatist Fascist social policy by deliberately marketing the bicycle as a classless machine – equally suitable for blue and white collar workers – and producing special models for party members.⁷⁰ Production levels of about 2 million bicycles a year were on a par with UK levels, reflecting the continued salience of the bicycle in the modal split of transport practices.⁷¹

In Italy, another early adopter and an important cycle producer, restrictions on bicycle mobility were introduced in the 1929 Highway Code but these were frequently relaxed as the necessity of maintaining bicycle mobility was understood. Bicycles continued to outnumber motor vehicles by a ratio of at least 10 to 1 throughout the inter-war period.⁷² Part of the reason for the hostility by the regime can be attributed to the manner in which the bicycle had been heralded by Left as weapon in the waging of class war. At first 'red cyclists' national congress in Imola the bicycle had even been presented as the providing the vanguard for revolutionary communications and propaganda. Conversely, the imagery of fascism revolved around speed, and motorisation despite the reality not matching the rhetoric. As Caracciolo (2009) perceptively observes, while the numbers of the bicycle increased, its social value decreased. Like much in Italy, levels of ownership and use varied dramatically across regions, reflecting broader inequalities in wealth. For example, in 1934 in Emilia, there was 1 cycle for every 4.4 persons, while in Basilicata, the poorest region of Southern Italy, only 1 for every 289 persons was recorded.⁷³

During the years of expansion in the 1930s came also a number of technological innovations. Although frequently dismissed in linear histories, they nevertheless reflect important relationships between bicycle manufactures, design and function. A number of

⁶⁷ Evidence compiled from correspondence in the CTC Gazette 1926-1940

⁶⁸ Ebert 2004 p361

⁶⁹ 27.9 cars per thousand inhabitants, as opposed to 42.1 for France & Great Britain - See Filarski p.91

⁷⁰ These observations derived from study of ranges of advertising materials held in archives of Deutsche Museum, Munich

⁷¹ Herlihey 2004: 328

⁷² Carlos Héctor Caracciolo (2009) *Bicicleta, circulación vial y espacio público en la Italia Fascista* *Historia Crítica* No. 39, Bogotá, pp 20-42

⁷³ Figures from John Foot (2011) *Pedalare, Pedalare: A History of Italian cycling* London: Bloomsbury pp.19ff

experiments were made in France with smaller wheel sizes.⁷⁴ Fully asphalted roads and paths do not technically require large wheels and advantages in size and in the capacity to carry loads on a centre-line can be realised. Working bicycle designs proliferated as they had in the 1890s, alongside production of trailers and sidecars as means to adapt solo or tandem bicycles for the carriage of luggage or persons.

A profusion of designs were constructed and placed into series production that radically re-oriented the relationship of the rider and the vehicle. Rather than mimic an upright or horse-riders stance astride the machine, bicycles were constructed around a rider placed in a seated (recumbent) positions as a car driver. These also had the advantage of greater comfort, as well as aerodynamic efficiency (so requiring lower effort).⁷⁵ In Denmark a related but less extreme class of cycles became popular. This was the Sofacykel, lauched in 1934 as a future bicycle.⁷⁶ These had the cranks placed forward of the saddle but retained a more upright stance, providing the advantage of being able to stand stationary in the saddle whilst keeping the feet on the ground.⁷⁷ Other technical development in the application of light alloys, derailleur gearing and further advances in Hub gearing all reflected a healthy market.⁷⁸ Perhaps the most important technical development of all was that occurring outside of Europe in the marriage between bicycle and rickshaw in order to create the hybrid cyclo-rickshaw.

The examples given here are far from a systematic overview of cycling trends. However, even this initial glimpse into a comparative study, not taking the development of other transport systems into account, begins to reveal significant factors shaping cycling practices and in the construction of differing meanings around bicycle use according to localised conditions. The final examples are drawn from the wartime and postwar period. They are included to demonstrate the limited usefulness of an ephocal historiography and some of the alternate shapes to emerge once a less eurocentric view is taken.

War and its aftermath

The fortunes of the Second World War had dramatic impacts not only on levels of cycling but on the productive capacities that dictated levels of cycling and its image in the post-war years. Among the major combatant nations, Germany had by far the greatest use of cycles by the military, having correspondingly lower levels of motorisation. The bicycle was a pragmatic choice of vehicle. Importantly, it was the independence of the bicycle from the need for other support structures (petrol or fodder) that lent itself best to the more mobile patterns of warfare in 1939-45. The bicycle's potential had been trumpeted as an important innovation in the First World War, but the reality of static trench warfare and mass bombardment rendered it largely irrelevant. Little was said in praise of the bicycle at the outset of the Second, demonstrating just how mundane it had become. Yet, the bicycle was

⁷⁴ Pinkerton, J., & Hadland, T., (1996) It's in the Bag Birmingham: Dorothy Pinkerton

⁷⁵ Cox 2012 Human Powered vehicles *Cycle History* 21

⁷⁶ <http://sofacykelgalleri.dk/>

⁷⁷ The design of the conventional bicycle etains elements of the high wheeler, in that since the cranks are more or less below the saddle, placing ones feet on the floor while remaining seated is a physical impossibility f the saddle is the right distance from the cranks for proper use.

⁷⁸ Berto, Frank J (2005) *The Dancing Chain: History and Development of the Derailleur Bicycle* {2nd revised edition} San Francisco: Van Der Plas Publications / cycle publishing; Hadland, Tony (1987) *The Sturmey Archer Story* Birmingham: John Pinkerton

a significant means of mobility not only on the battlefield, but on the home front, as petrol rationing and the reallocation of transport provisions toward the support of militarisation affected peoples' options for mobility alongside the transformation of working practices. Restrictions on the availability of steel tubing restricted some production, but the main problem was the loss of sources of rubber for European and American manufacturers.

The Japanese Army, while not carrying bicycles itself, commandeered bicycles wherever it went in its advance through South Asia in order to produce its legendary mobility.⁷⁹ For this analysis, the significant factor in this use of the bicycle is the way that it demonstrates how ubiquitous the bicycle was through Malaya and other South Asian regions: the military knew that they would not need to take machines with them, only the power and authority to annex local bicycles. The commandeering of local bicycles by occupying forces in Europe lent them an iconic quality for forces of resistance, as witnessed by accounts in Denmark, the Netherlands, Italy and France.⁸⁰

In Italy, wartime brought general resurgence in bicycle use and it was even the subject of state promotion as a means of leisure and of practical mobility.⁸¹ Yet paradoxically, this increase in wartime use led to even greater rejection post-war as a symbol of the misery that the population wanted to leave behind.

In neutral Sweden, isolation from the normal trade routes also created a dramatic boom in cycle traffic. Where Stockholm recorded 20-30% of traffic by bicycle in the 1930s, this soared to over 70% during the war years.⁸² Yet the element of necessity which gave rise to sudden and considerable growth in cycle use – another, though very different, boom – can also be seen have precipitated an even greater post-war decline as the disappearance of the element of necessity changed the context. Post-1945, Sweden rapidly embraced policies of modernisation, and deliberately drew on the USA as its exemplar. Road building and urban reconstruction programmes rendered bicycle traffic invisible, simply writing it out of some plans. It is unsurprising to see the decline of cycle traffic in Inner-city Stockholm from 29% in 1950, to 2.4% in 1960 and 0.8% in 1970.⁸³ Regrowth in numbers through the 1980s led to the parallel figures being 4% in 1991 and 10% in 2006. The expectation of planners in Sweden was that cycle traffic would 'naturally' disappear in the unfolding of a motorised society. The only time that it is considered in planning documents seems to be when it is perceived to pose a problem for the uninterrupted flow of motor traffic, and some provision must be made to remove it from the highway.

In similarly neutral Switzerland the steady post war rise in the rate of growth of car registrations was accompanied by a decline in bicycle registrations. In similarly neutral Switzerland the steady post war rise in the rate of growth of registrations was accompanied by a decline in bicycle registrations. Although dependence on bicycles for quotidian mobility during the war years was high, the rates do not appear to have been so dramatically variable as in Sweden. After an initial surge in the later 1940s, cycle growth rates declined, entering a period of absolute decline by 1955, a pattern which was not halted until 1973. Hereafter bicycle and car growth rates, though variable, were roughly stable until bicycle growth

⁷⁹ Fitzpatrick (1998)

⁸⁰ Fitzpatrick 1998. Foot 2010, See also displays in the Museum of Resistance, Copenhagen

⁸¹ Caracciolo (2009)

⁸² Martin Emanuel (2011) *Planning the urban bicyclist in Stockholm 1930-1970* Paper presented to

Re/cycling histories 26-27 May Rachel Carson centre

⁸³ Dufwa 1985 cited in Martin Emanuel p1

overtook car growth in the 1980s.⁸⁴ Car ownership rates marginally overtook cycle ownership levels around 1970 (the low point in cycle ownership) and have remained almost identical since, although cycles have been slightly more numerous since the end of the 1980s. However, the third important element in Swiss road traffic consists of powered two wheelers, scooters and motorcycles. Their ownership rates and numbers follow a similar pattern to that of cars but overall numbers remain smaller than either cars or bicycles. Consequently, one may see the importance of the bicycle as part of an overall dominance of two wheelers. Swiss investment in mobility planning is not simply limited to the provision of rail systems. Segregated cycle paths have been prioritised in line with an emphasis on mobility safety, but the consequence is that these lanes are generally designed and constructed to high standards, in order to ensure their fitness for purpose.

The British zone of occupation in Germany included a number of production facilities important to Pre-war bicycle production. In the moves to partially reconstruct industrial manufacture in order to re-establish the economy, these were subject to inspection by British Intelligence, using a delegation drawn from British manufacturers. As well as assessing plant and techniques to see what might be adopted in the UK, plans for a standard utility bicycle were produced. However, these did not utilise existing manufacturing techniques, and were clearly impractical. This may perhaps be read as an attempt to stifle post-war bicycle production in order to safeguard British interests. Whatever the intention, they failed and 2 years later a Dutch delegation, also sponsored by British Intelligence reported that these plans had simply been abandoned after less than 6 months. German bicycle manufacture was largely left to rebuild itself, in contrast to the assistance given to the motor industry.

Adri Albert de la Bruheze and Frank Veraart demonstrate a common pattern of rapid decline of bicycle use during the 1950s across a broad range of locations in their comparative study of cycling in European cities.⁸⁵ While true across their study area, this pattern should not be universalised. The recovery of industrial production in post-war Japan included a re-growth in bicycle production.

After the dramatic decline of the latter war years, a process heightened by the unavailability of basic raw materials, the 1940 total of registered cycles was regained in 1948, rising to 10 million in 1950, 20 Million in 1960 and 30 Million in 1970. By 2005, some 80M cycles were used by a population of 127 Million.⁸⁶ The decline characteristic of European cycle use is not visible in Japanese bicycle use. Reasons for this unique pattern are numerous and complex. The industry has had significant high levels of investment in research and development, in part funded by unique taxation of gambling on professional cycle racing (keirin). In the 1950s a new style of bicycle – the mama-chari was introduced to challenge the dominance of the old-style roadster. Open frame in style (what is usually referred to as a ‘women’s frame’) with attached front basket the mama-chari is eminently suited to everyday use – a practical ride with a modern twist. In the mid 1960’s production also quickly embraced the arrival of small wheel bicycles in the wake of the initial British enthusiasm for the Moulton bicycle. Hence the bicycle has periodically appeared to be reinvented as a new technology, enabling it to avoid the stigma of obsolescence.

⁸⁴ All data from Meyer 2008

⁸⁵ Adri Albert de la Bruhèze and Frank C. Veraart FCA *Fietsverkeer in praktijk en beleid in de twintigste eeuw*, (Den Haag, 1999)

⁸⁶ See M William Steele

Closely linked with the fortunes of the Japanese bicycle industry and its products are the fortunes of the bicycle in China. As in Japan, the bicycle at first was encountered through the aegis of missionaries and other European colonists. The rapidity of the bicycle's rapid negation as a symbol of modernity and progress is neatly illustrated by Edward Rhoads' discussion of the presentation of a new French automobile to the founder of the mass education movement when his patron saw him riding a bicycle.⁸⁷ Although the cycle was an almost insignificant element of the traffic profile until the early 1920s, by the end of the decade they were almost twice as numerous as the combined motor-vehicle fleet and two thirds of the number of rickshaw. From 1934/5, bicycle imports from Japan rapidly escalated to reach well over 50,000 p.a. before the decline caused by the war

Local manufacture remained relatively insignificant, and significant production capacity only arrived with the Japanese invasion. Chinese bicycle manufacture grew rapidly after 1945 when it took over the 3 plants by the Japanese in previously occupied territories.⁸⁸ These large sources were augmented by numerous smaller independent firms.⁸⁹ Initially large quantities of cycle rickshaw were built to replace the handpulled rickshaw following the Nationalist government decree of 1946 calling for a 3 year phase-out, but after the communist takeover, all passenger rickshaw use was seen as decadent and bicycling by women disapproved. Rickshaws remained in mainland China, but mainly as goods-carrying vehicles.

Faced with trade embargoes, Chinese bicycle production increased rapidly through the 1950s, from 80,000 in 1952 to 806,000 in 1958, 1,838,000 in 1965 and 8,540,000 by 1978).⁹⁰ But these figures mask a very uneven pattern of development and of bicycle use. The most dramatic expansion of production and use came during the great leap forward (1958-68) but, as in other booms was followed by a slump caused by market saturation, compounded by external factors of the withdrawal of Russian aid and steel shortages.⁹¹ Ownership and use during this period was also shaped by party membership factors. The Rapid growth in urban employment 1978-1983 plus economic reform from 1979 onwards led to growth in personal income and rapid increase in demand. Urban bicycle ownership rises from 102 per 100 households to 160 in 1978-1983 (i.e. 57%) reflecting a 66% rise in household income. This was followed by a subsequent levelling off of demand as relative saturation limits were attained. Rural ownership rose from 30-63 per 100 households in same period, continuing to rise to 177 per 100 household in urban areas and 99 per 100 in rural districts by 1987.⁹² Retail prices had remained relatively static against rising wages and state investment in industry had enabled new production, but in a seller's market, quality was not deemed important. The market saturation and overproduction from 1984-1988 resulted in plant closure and a shift to concentrate more on quality. By the end of the millennium, the bicycle was in sharp decline, as five year plans concentrated on automobile production. However, today bicycles still constitute a significant proportion of the traffic, and are being reassessed in light of apparently insurmountable traffic problems. Current patterns of

⁸⁷ Rhoads, Edward (2011) 'Cycles of Cathay: A century of the Bicycle in China', *Paper presented to Re/cycling histories 26-27 May, Rachel Carson Centre, Munich*

⁸⁸ Rhoads p.18

⁸⁹ Tao, Xu Bicycle Trade Organizations in Modern Shanghai *Urban History* 38 (3) 2011 457-474 p.

⁹⁰ Rhoads p. 19

⁹¹ Zhang, Xun-Hai (1992) *Enterprise Reforms in a centrally Planned economy* Basingstoke, UK: The Macmillan press

⁹² Zhang 1992 p150-152

replacement by scooters and motorcycles reflect perceptions of bicycles as symbols of backwardness.

Chinese production now dominates the global bicycle export business. European manufactures have transferred significant proportions of production to the Far East – China and Taiwan. Whether the investment currently being made in high technology manufacture for the European market, particularly in carbon-fibre and hydroformed aluminium may create new image of the bicycle as a 21st century technology remains to be seen.

These examples hint at the need for a more complex approach to bicycle history. Though fragmentary, the examples given demonstrate the need for a move away from periodic histories towards comparative study and studies linked to wider considerations of transport and of other consumer goods.

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