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THE PERSISTENCE OF CORRELATIVE WATER RIGHTS IN COLONIAL AUSTRALIA: A THEORETICAL CONTRADICTION?

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Abstract:

This paper analyses whether the evolution of water law in the Australian colony of New South Wales (NSW) contradicts theoretical models that suggest in arid countries correlative, land based water rights will be replaced with individual ownership. Evidence from NSW shows a series of Supreme Court decisions between 1850-1870 adopted correlative riparian rights thereby implying that common law was inefficient. However, further consideration of factors that gave rise to these decisions suggests the value of water was higher when used in unity because of the arid climate and non-consumptive nature of water use in the pastoral industry. The findings suggest that where intensity of water use is low, economic development is dominated by industries requiring low levels of capital investment, and acute water scarcity prevails, correlative water rights are efficient.

Keywords: water rights, common law

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THE PERSISTENCE OF CORRELATIVE WATER RIGHTS IN COLONIAL AUSTRALIA: A THEORETICAL CONTRADICTION?

Evidence from the Australian colony of New South Wales (NSW) appears to contradict the theoretical proposition that in arid countries, land based water rights like riparian rights will give way to private individual ownership because the latter allows for a more precise definition of rights.[i] In contrast with empirical evidence from the American west during the nineteenth century and formalisation of prior appropriation by the judiciary, NSW courts did not promote a shift to individual ownership. Instead, a series of decisions applied the riparian doctrine as it evolved during the period 1850 to 1870. This outcome is even more remarkable given the extent of flexibility afforded to NSW courts by Imperial legislation that introduced the common law to the colony.

NSW inherited the common law of riparian rights by virtue of the *Australian Courts Act* (1828).[ii] This act established the date for the introduction of British common law, including riparian rights, to the colony as July 25, 1828. After this date, section 24 of this legislation meant English court decisions no longer bound colonial courts.[iii] Nevertheless, they could be relied upon as decisions of coordinate jurisdiction.[iv] This allowed NSW courts to adopt, adapt, or ignore any or all aspects of British precedent established after 1828 unsuited to colonial conditions. Given the colony experienced high levels of water scarcity (as does Australia generally) this provided a unique opportunity for the NSW judiciary to introduce any one of three water institutions for which there was precedent. These three institutions were: the prior use rule developed in

England before 1833[v]; the riparian rights reasonable use doctrine as it evolved in the US Atlantic states and England from 1827 onward or; prior appropriation formalised in the American west after 1850. Theory would predict that NSW courts would have applied either the first or last of these common law rules due to aridity. Instead, contradicting theoretical predictions, NSW decisions favoured the second set of common law precedents.[vi] From this perspective, if NSW common law outcomes are interpreted using the instrumentalist school's view of the judiciary as explained by Schieber and McCurdy (1975) then, it is possible to argue NSW common law was inefficient. In other words, unlike the judiciary in the American west or England over the same period, NSW judges failed to adopt a facilitative stance toward entrepreneurial activity making capital investment less profitable.[vii] This paper explores whether this is an accurate interpretation of common law water rights in colonial NSW. Furthermore, the analysis will consider how the adoption of riparian rights and the apparent divergence from theoretical predictions might be explained in the NSW context.

The plan of the paper is as follows: section two outlines the development of the riparian doctrine determined by cases in eastern American states and Britain from the 1830s onward. This period saw the introduction of a more rigid interpretation of riparian rights via the application of the reasonable use doctrine. Strictly defined, reasonable use prevented upstream riparian owners from damming, diverting, or otherwise reducing flow in any way that would negatively impact downstream users' correlative rights. In NSW, water scarcity created a situation where, in the more arid areas, like the western district of the Riverina, dams and diversions were critical to allow settlers to make productive use

of land without river frontage. Yet, decisions by the NSW judiciary appear to ignore this implication. This would have reduced private capital investment in such activities and therefore, reduced economic development. Section three provides a brief description of the evolution of prior appropriation in California and the subsequent hybrid system of water adopted in a number of other western states. The choice of the Californian doctrine might appear surprising given NSW aridity would suggest perhaps riparian rights should have been superseded by prior appropriation as was the case in Nevada, Arizona, Colorado and other more arid states of the west. However, the choice is based on the striking similarities between California and NSW during the period being considered here. The most significant for the purposes of this analysis is that predominant economic activity took place on publicly owned lands. As explained below, it was the difference in government action toward this occupation that created divergent paths of water rights institutions adopted in the two areas.

Section four provides a brief history of the path of economic development in NSW to offer context to the legal environment in which riparian rights evolved. Details focus specifically on the expansion of settlement, government attempts to control this, and the corollary growth of the pastoral sector. An understanding of these factors allows for illumination of water right decisions at common law. Section five analyses two important questions. First, why the NSW Supreme Court determined water rights cases using the riparian doctrine under arid conditions? It is argued that legislative developments during the period limited the courts ability to be flexible in the application of water right institutions. However, it did retain flexibility in interpretation of the

precedent it applied. This leads to the second question: can the strict interpretation of reasonable use that was employed be understood in the context of NSW given the theoretical predictions noted above? Section six gives some brief concluding remarks and some suggestions for possible future research.

2. The development of Riparian Rights

Riparian rights are a class of privileges that resemble the more general property law doctrine of nuisance and the general tort law of negligence.[viii] These rights are acquired only by individuals owning land coming in contact with a water source, conferring on them usufructuary rights to water. Under common law, when land borders a river or stream, the boundary of ownership extends to the bed of the water source. In this way, individuals own land *ad medium filum aquae* (to the 'middle thread'). Therefore, it is by virtue of position that they acquire rights to make use of the water flowing over this land. For this reason, riparian rights are correlative where each land owner is expected to make use of water in a way that is not inconsistent with the rights of other riparian owners along the same watercourse.

Prior to industrialisation in England and the US, common law interpretation of riparian rights had been stable for many years. Traditionally, courts had determined riparian cases based on ancient use, providing protection for individuals with the oldest uses. However, changes in water use during industrialisation challenged this approach as the need to protect and encourage increased capital investment. As a result, riparian rights evolved significantly during the nineteenth century, developing many of its modern

precepts. Perhaps the most crucial change was the replacement of ancient use with reasonable use. This was far from a smooth transition, and the timeline of change is worth a brief discussion.

Prior to the formalisation of reasonable use, courts in some US states and England had begun to determine water conflicts using the rule of prior-use. In England this rule developed from the 1600s onward as courts attempted to clarify prescriptive rights, what they were and how they came into being.[ix] Shury v Piggot[x] is the most cited of these cases where the court established seniority of right. This established precedent for subsequent claimants to employ prior-use as the basis for asserting or defending rights to water.[xi] Nevertheless for the next century, the implications of this doctrine resulted in considerable confusion for English jurists.[xii] Blackstone's *Commentaries* in the late eighteenth century attempted to provide clarity of the issue by stating that rights to flowing water should follow occupancy, or first possession.[xiii] This rule was subsequently followed in the influential case of Bealey v Shaw (1805).[xiv] In applying prior use, the Chief Justice, Lord Ellenborough, noted individuals have the right to advantage of waters flowing in their land without diminution or alteration by others.[xv] This judgment implies it was not simply prior use that provided a water user with the right to have flow without interruption it was a right to the natural flow of the river itself. Prior-use was a radical departure from ancient use and created complexity in determination of cases at a time when such intricacies reduced the common laws responsiveness to increasing water use conflict. In part, this can explain the ensuing adoption of reasonable use in England. Subsequent to English cases, judges in the US

(for instance, Massachusetts) also began to apply the prior-use rule. However, they were motivated by somewhat different circumstances compared with English courts. Specifically, decisions in US cases were an attempt to overcome inefficient statutes that failed to create clear rights when similar uses, for instance mill owners, came into conflict.[xvi] Nonetheless, by the nineteenth century, both English and US courts came to favour the reasonable use doctrine.

Reasonable use was first applied in a New York case, Palmer v Mulligan (1805)[xvii] in response to pollution and flow interruptions. In *Palmer* the court established the basis for creation of correlative rights to water use that became the foundation for interpretation of riparian rights. Essentially the judgment found riparians had equal rights to use the water source and uses could involve some inconvenience to others however, these were not actionable if they were merely minor.[xviii] These principles were further refined in the US Supreme Court case of Tyler v Wilkinson (1827).[xix] Justice Story rejected the plaintiff's mere priority of appropriation and reasoned that because the right to enjoy flow in a channel was an incident of riparian land, every riparian owner must own the right to use flow.[xx] For this reason, he asserted that any diversion or interference must not reduce the value of the common right.[xxi] Furthermore, the reasonableness of a particular diversion or interference should be considered given the circumstances. By definition this latter consideration instructed the jurists in subsequent cases to consider the size of the river at issue. English courts followed this US precedent, albeit after a lag of twenty years. In England, reasonable use was first applied in Wood v Waud[xxii] and later refined in Embrey

v Owen.[xxiii] *Embrey* was the more influential of the two cases citing the US precedent in *Tyler*.[xxiv] Thus, the judgment, handed down by Parkes, J. defined reasonableness stating:

> All that the law requires of the party by or over whose land a stream passes, is, that he should use the water in a reasonable manner, and do so as not to destroy, or render useless, or materially diminish or affect the application of water by the proprietors above or below on the stream.[xxv]

The legal development of riparian rights, particularly, the reasonable use doctrine reflects the different paths of economic development experienced in both the US and England (as did the evolution of prior appropriation in California noted above). Initially, US Atlantic states were confronted with water use conflicts between mill owners and farmers or households, leading to legislative action that gave priority of water use to the former because those activities were more economically valuable.[xxvi] However, legislation was incomplete because it failed to indicate a priority use where two mill owners came into conflict. Therefore, these disputes were settled in the courts leading to the introduction of reasonable use. In England, the opposite occurred, with mill owners being primary stream users before the nineteenth century. As industrialisation accelerated, accompanied by significant population expansion and competing water uses, conflicts became centred on use of the river to carry water away versus its use to provide urban water.[xxvii] And, much like what occurred in the US, these disputes were settled using the common law leading to the adoption of reasonable use as described above.

3. The California Doctrine

The California doctrine evolved primarily out of the needs of an expanding gold mining sector during the mid-nineteenth century. Gold discoveries in the late 1840s encouraged a large population influx over the proceeding decades. Notably, the discovery of gold occurred just after California had been annexed to the US following the war with Mexico.

As a result, by the time of the gold rushes, there were no government controls placed on the possession or use of natural resources within the state with most Californian land being owned by the federal government. Gold mining was a lucrative economic activity which required relatively high levels of capital investment therefore, the delineation of property rights to natural resources was crucial. In the absence of a state legislature, miners themselves created regulations to enforce rights to claims and key inputs, such as water.[xxviii] Water became governed by principles of priority of use where a person that was first in time, was first in right. This became known as the prior appropriation doctrine. Prior appropriation allowed miners to divert water onto non-riparian lands and permitted transfers between individuals. However, as explained below, seniority of water rights based on first occupation was not a new concept. In fact, as discussed in section three, courts in both the US and England applied this dictum to a number of cases prior to the 1850s.

Paralleling informal prior appropriation among miners, in 1850, the newly formed California legislature passed an act adopting English common law throughout the state. Kanazawa (1998) argues this was aimed at reducing the costs and uncertainty of producing legal rulings because most judges and lawyers were acquainted with the common law and the necessary materials were readily available to them. In passing this legislation, an existing part of the English common law thus adopted was the riparian doctrine. Riparian rights limited the right to water use to individuals who owned land abutting a water source. However, prior appropriation did not rely on land ownership, allowing any person to claim a right to water based on their action of using it. Therefore,

it was inevitable that such contradictory sets of rights would create conflict ultimately decided within the courts.

Between 1853 and 1857 there was inconsistency in the California Supreme Court's application of riparian rights. For instance, the court supported elements of the riparian doctrine drawn from both English and eastern American cases in Eddy v Simpson[xxix] and Crandall v Woods[xxx]. However, in Irwin v Phillips[xxxi] the court found in favour of the individual making first use of the water based on invoking the English common law rule of *disseisin* or 'naked possession.'[xxxii] The rule allowed miners to acquire possessory rights to land if the legal owner did not act to prevent a trespasser.[xxxiii] Given neither the US federal government nor the newly formed Californian state government acted to prevent the occupation and use of public lands by miners, possessory rights were permitted. Possessory rights were based on the presumption of a land grant being made. This allowed the California Supreme Court to support the fundamental principle of prior appropriation in water use. However, these events confined the application of prior appropriation to water rights in the public domain[xxxiv], thereby indicating that on privately owned lands, principles of the riparian doctrine would be used to determine cases. Hence, the California doctrine was created.

During the early years of development of the California doctrine as briefly outlined above, an important consideration for the California Supreme Court was to provide secure water rights to facilitate capital investment in gold mining. Water was a crucial input for successful mining and was often required a long distances from the source. In

this context, the rigidities of riparian rights would have imposed limitations on the continued expansion of the industry by reducing private capital investment. It was these conditions that prompted miners to informally regulate use to achieve efficiency via prior appropriation. California Supreme Court judgments show a tendency on the part of the judiciary to give formal sanction to these informal miners' codes. In the early years of application, this support provided incentives for bargaining between bilateral riparian owners and appropriators because transaction costs of negotiation were low.[xxxv] This supported Coasean bargaining and efficient use.[xxxvi] Such an outcome substantiates Posner's (2003) claim that the common law tends toward efficiency this indicates the judiciary played a crucial role in promoting economic development in California via its impact on water law.[xxxvii]

4. Economic development in colonial NSW

As outlined in sections 2 and 3 above, developments in water law between the seventeenth and nineteenth centuries provided NSW courts with an extensive body of precedent from which to draw when making decisions. Essentially, this case law established three different water institutions that could be applied in NSW: prior use; riparian rights and associated reasonable use principles or; prior appropriation. As noted in the introduction, theory would predict that because NSW was arid the judiciary would apply either the first or the third of these institutions. Yet this failed to eventuate as court decisions adopted riparian rights and gave a strict interpretation to the reasonableness requirement. However, before the discussion turns to an analysis of this divergence from theory in NSW, a brief outline of economic development in the colony is warranted.

NSW was the first Australian colony established by Britain for convict settlement. The first group of convicts arrived in 1788 and the colony remained relatively small in terms of the free population for the next few decades.[xxxviii] By 1802 the population numbered 5,866 however, only 404, or 0.7 per cent, were free settlers.[xxxix] For much of this early period, the military administration concentrated its efforts on increasing agricultural productivity to make the colony self-sufficient in food production. During this period, land policy was dominated by free grants from colonial administrators to settlers.[xl] This method of allocation continued well into the 1830s. Land grant allocation was influenced by Wakefieldian theories of systematic colonisation encouraging administrators to control geographic expansion of the colony.[xli] To these ends, in 1829, colonial administrators passed legislation defining the boundaries of legal settlement, referred to as the Nineteen Counties. Beyond these boundaries, settlement was illegal and subject to criminal prosecution. However, land degradation, coupled with the increasing value of Australian wool on British markets encouraged settlers to cross prescribed boundaries in the search for better grazing land.[xlii] Moreover, the length of the boundary, some 900 miles, and low police numbers made it impossible for administrators to prevent this population movement. Settlers that illegally occupied territory outside the Nineteen Counties became known as squatters.

During the period of squatter occupation, approximately 1830 to 1880, the pastoral sector dominated the economy and by 1850 it accounted for over 77% of the total value of colonial exports.[xliii] As noted, like Californian miners during the late 1840s, squatters

occupied publicly owned (Crown) land. However, unlike California, NSW colonial administrators acted quickly to assert Crown title to this land. Evidence suggests that this was not to prevent creation of possessory rights that could be claimed at some later date rather, it was in response to demands of squatters themselves. The colonial government complied with squatters requests in an effort to support continued growth of the pastoral sector. To these ends, administrators established a land licensing system in 1836.[xliv] Under this system, squatters had to purchase a £10 licence that allowed them to occupy as much land as they wanted in any district outside the boundaries of official settlement. Nevertheless, all colonial land, other than that given in free grants, remained owned by the Crown with squatters simply acquiring occupancy rights. This permitted the Crown to evict squatters at any time without compensation. As a result, the 1836 licensing system did not give squatters security of tenure or protect their land improvement investments and land right conflicts continued into the 1840s.[xlv]

During the 1840s squatters continued to lobby government for secure property rights. A compromise was reached in 1847 with amendment to the licensing arrangement granting squatters pre-emptive rights. Pre-emptive rights allowed squatters to purchase their land before or in preference to others.[xlvi] This increased their ability to maintain control of land claims against any future redistribution by government.[xlvii] Like the licensing system introduced a decade earlier, this concession was motivated by the economic significance of the pastoral sector as the colony's main export sector. However, it did not reduce administrative control of colonial land. A decision that proved crucial for the promotion of economic development in the decades following the NSW gold rush.

As noted, the pastoral industry developed mainly in response to the increasing value of Australian wool on British markets however, it had two significant advantages over more permanent forms of agriculture. First, it required low levels of capital and labour both of which were relatively scarce. Second, it was a relatively drought tolerant industry in that it reduced the risks associated with extreme water scarcity experienced frequently in the more arid districts of NSW. Grazing reduced the cost of drought because it was a geographically mobile industry with sheep being able to be moved great distances at relatively low costs. To compliment mobility advantages, squatters scattered their land claims over wide areas. These advantages, combined with an abundance of land, made the pastoral industry the main driver of economic development before 1850. However, after 1850, gold accounted for a higher proportion of GDP than the pastoral sector and by 1860 mining accounted for 16.7% of NSW GDP while the pastoral industry contributed only 10.2%.[xlviii]

In the early years of the gold rush (1850 to 1860) mining and pastoral activities took place in different geographic locations in NSW. This reduced the conflict over land use between the two sectors.[xlix] However, by 1860, the exhaustion of low cost alluvial gold supplies resulted in unemployment. To alleviate unemployment, the colonial government instituted land reform policy, free selection before survey (selection), in 1861. The policy mirrored homesteading introduced during a similar period in the American west. In NSW, under the Crown Lands Occupation Act (1861) squatters' could secure lease to a limited acreage (320 acres) via an auction system and pay a flat rental rate. Once

leasehold was acquired, squatters' retained pre-emptive rights to purchase this land under freehold on expiration of the lease. After obtaining freehold, squatters had the right to lease adjoining land three times the size of the freehold property at a rental of £2 per square mile, per annum. This circumvented 1847 legislation by limiting pre-emptive rights to much smaller areas of land than occupied by squatters. However, loop-holes in the legislation made it easy for squatters to evade these requirements by using dummy selectors. Dummying involved squatters' contracting with agents to select part of the land they occupied, register the claim with the Department of Lands (often under false names), and then sell it back to the squatter for a small fee. This practice also involved the registration of land selected under family members' names, including children. The use of dummying implies two things: squatters placed a higher value on the land than selectors and; the size of claims squatters' were allowed was too small. In general, these evasion tactics were successful, leading to the failure of selection policy to effectively redistribute colonial lands to small holders with squatters' retaining control over a majority of the land they originally occupied.[1]

It was between 1850 and 1870 that the bulk of water disputes were decided by the Supreme Court. However, as might be expected given the outline above, because NSW was a relatively new settlement with an initially high proportion of convict population case numbers were much lower than in England or the US. In total, five cases came before the Supreme Court during the period of observation. The judgments in these cases imposed riparian rights, instigating the reasonable use rule in accordance with English precedent. In and of itself, this implies that even though high water scarcity persisted in

some areas, particularly during drought, there was little conflict over water use. This is linked to the advantages of grazing as described above. Whether the strict interpretation of reasonable use supports the claim that NSW common law was inefficient will be discussed below.

5. Common Law Efficiency in NSW

The NSW Supreme Court was the highest court in the colony during the period. England's Privy Council mirrored the role of the present-day Australian High Court in that it only determined cases involving inter-colonial disputes or where legislation expressly granted individuals leave to appeal Supreme Court decisions to the Council.[li] It is important to note each Australian colony was independent until Federation in 1901; therefore cases determined in other colonies did not bind the NSW Supreme Court. However, like British courts, inter-colonial judgements could be relied upon as decisions of coordinate jurisdictions. It is for these reasons that the NSW Supreme Court could choose any of the three water institutions noted above. An explanation of the choice arrived at and the impacts on efficiency are discussed below.

As noted, the first option available to the NSW Supreme Court was to adopt prior use as developed in England before 1833. However, evidence suggests there was no legal basis for its application in NSW. Prior use was based on prescriptive rights established by occupancy. Occupancy rights presume the absence of any prior occupant and therefore, no resource rights exist at all.[lii] This rule could not be applied in NSW because the Crown had claimed its right to colonial resources, including water as an incidence of land

claims. Accordingly, the Crown itself was the prior occupant. If the Crown was the occupant then no prescriptive rights could exist. Without being able to prove prescriptive rights, prior use could not be employed as a remedy in water rights conflicts. In addition, no colonial legislation created the possibility for prescriptive rights to be obtained.

The NSW Supreme Court expressly dealt with this issue in two cases: Cooper v Corporation of Sydney and Howell v Prince.[liii] In *Cooper* at issue was the plaintiff's entitlement to compensation for reduction of water flowing to his property created by the defendant's diversions to supply the city of Sydney. During the judgment, the court briefly considered the issue of prescription and whether, in the absence of legislation similar to that passed in England, it was possible for the judiciary to instruct the jury to presume a grant. Stephen C.J. emphatically denied this potential maintaining, "all lands have been, throughout the colony, at a very recent date, in the hands of the Crown, and that there can be no grant from the Crown, except by record open to everybody."[liv] By virtue of these claims, if access to water was an aspect of the land in question, the Crown declaration included ownership of water. Nevertheless, Stephen C.J. added,

> But, in addition to this, the Crown has never occupied or used the land, form whence the water claimed is derived, except only for the purposes of supplying the city with that element. Would not the presumption, therefore, of a Crown grant, conveying to an individual the surplus, or casual overflowing of the water from that land, be too violent to be adopted by any tribunal?[lv]

This statement appears to leave open the possibility for prescription to be claimed in subsequent cases thereby allowing for prior use to be introduced at some future date.

However, 16 years later, in *Howell*, the court expressly denies this potential in the absence of legislative authority with Hargrave J. stating,

> The alveus of the stream cannot lawfully be interfered with. The Prescription Act ought to be adopted, so that the rights of persons may be protected who have enjoyed the use of the water, it may be for many years, and whose enjoyment has been acquiesced in. [lvi]

The outcome in *Howell* can also be used to explain why prior appropriation was unable to be adopted in NSW. As noted, prior appropriation relied upon *disseisin* or 'naked possession' to create possessory rights. Once possessory rights were obtained, prior appropriation had common law foundation. In NSW, because the colonial government had acted to regulate trespassing on Crown land via licenses, thereby asserting its rights as original owner, no possessory rights could be created. As a result, there was no common law foundation for prior appropriation. Clark (1970) supports these findings arguing that at no time did the colonial government allow a period of legislative inaction in which custom could develop into a recognised body of law.

The precedent establishing reasonable use in NSW was *Cooper* with *Embrey* being cited as the authority. On this basis, the plaintiff was entitled to reasonable flow of water as incident to the property of land. Furthermore, the court claimed that the law, as it affected such cases, was clear. This decision was reaffirmed in Pring v Marina.[lvii] In *Pring*, the defendant erected a dam preventing water flow to downstream users. The plaintiff argued this reduced the value of his station (parcel of land). Here, the court again relied on *Embrey* to apply the reasonable use doctrine. Based on the decision in *Embrey*, the judgment in *Pring* found that an individual experiencing any interference with their rights, however imperceptible, retained a right of action at common law to

prevent the continuation of the action causing the interference. In light of the Crown's action to retain control of colonial resources, it is arguable that the Supreme Court had no legal foundation to apply anything other than riparian rights in these cases. Nevertheless, the court did retain flexibility in the way it *interpreted* the riparian precedent it cited. Interpretation could have been lenient or strict.

A lenient interpretation of *Embrey* could allow the court to argue that the condition of water scarcity meant in the more arid districts of the colony dams were only a minor inconvenience and they did not reduce the value of the common right. *Tyler* established a precedent for this and the judgment would have been known by the NSW Supreme Court given it was cited in *Embrey*. In fact, Chief Justice Stephen's opening statement in the judgment of *Pring* states, "The erection of a dam by a riparian owner across a running stream, might, perhaps, under some circumstances, be lawful."[lviii] However, there is no suggestion of under what circumstances this might apply. In addition, immediately following this statement he claims, "But it cannot be so, I conceive, if it obstruct – though for one moment only – the flow of the entire stream to the other lands below."[lix] Thus, the strict interpretation of reasonableness was incorporated into NSW common law. This raises two important questions. Why did the NSW Supreme Court adhere to this strict interpretation and; how do these decisions fit in with the argument that common law tends toward efficiency if, due to aridity, the theoretically optimal solution was individual ownership? To explain this apparent contradiction in the evolution of NSW water law the efficiency of appropriative rights in the NSW context needs to be explored.

During the period being examined two factors reduced the efficiency of appropriative rights in NSW compared with California: intensity of water use and the economic impact of water scarcity on grazing. First, intensity of water use in NSW was low during this period with grazing being primarily non-consumptive. Rose (1990) argues that where consumptive uses are low; water takes on a pubic good aspect where its value is higher if used in unity. Theoretically, this leads to a preference for correlative compared with appropriative rights because predominant uses mean the waterway better lends itself to common-pool sharing arrangements.[lx] In addition, unlike mining in California, grazing was less capital intensive with the marginal product of land being higher than any other input, including water. Therefore, capital investment losses associated with riparian rights' were lower in NSW than they would have been had the doctrine been retained in Californian mining areas. Furthermore, because of low population density, high transaction prevailed in NSW. This prevented bargaining around the initial allocation of rights, thereby reducing the effectiveness of specifying individual appropriative rights.[lxi] For these reasons, empirical evidence suggests the creation of correlative rights under the riparian doctrine by the NSW Supreme Court fits theoretical predictions of the evolution of water rights because the water use was primarily non-consumptive and transaction costs were high preventing bilateral bargaining.

Second, water scarcity in more arid districts limited the efficiency gains from appropriative rights because periods of extreme drought would have magnified losses for downstream owners. This reinforced the high value of water when used in unity. The decision in *Embrey* recognised this as a crucial consideration at that time in English

development where the court explicitly noted that without the qualification of correlative rights based on reasonable use, "rivers and streams would become utterly useless, either for manufacturing or agricultural purposes."[lxii] Supreme Court judgments applying reasonable use in NSW explicitly followed the precedent as established in *Embrey*. This outcome suggests that the NSW Supreme Court recognised the public good aspect of water in the colony and the potentially large losses associated with appropriative rights. In applying reasonable use the court not only mitigated these effects but also provided for a relatively even distribution of rents accruing from water use thereby supporting economic growth. Considered in conjunction with Schedvin's (1990) claims that Australian economic development relied on exploitation of a series of staple products of which wool was one, there is little doubt that water law decisions between 1850 and 1870 supported this process. In terms of the theoretical framework, these empirical findings suggest that under conditions where intensity of water use is low, economic development is driven by non-capital intensive industries, and water scarcity prevails, correlative rights may be more efficient. Therefore, NSW Supreme Court decisions did tend toward efficiency by imposing common-pool sharing arrangements and correlative water rights.

6. Conclusion

This paper analysed the apparent divergence between theoretical predictions concerning the evolution of water rights under arid conditions and outcomes in colonial NSW from the perspective of common law efficiency. It was shown that of the three institutional choices for exploitation of water resources, prior use, prior appropriation, and riparian rights, there was no common law foundation for the introduction of the first two arrangements. This was because occupancy and the correlative existence of prescriptive

rights could not be established due to government claiming rights to all land and thereby, water within the colony for the Crown. Based on this outcome, the introduction of riparian rights was inevitable. In turn, the findings suggest adherence to a strict interpretation of the reasonable use doctrine developed in US and English courts by the NSW Supreme Court between 1850 and 1870 was consistent with theoretical models given the dominance of non-consumptive water use and water scarcity considerations. Non-consumptive water use led to water taking on aspects of a public good leading to a higher value when used in unity. This meant that, as theory would predict, correlative rights were more efficient. In addition, high transaction costs and low levels of capital investment in the pastoral industry reduced the losses associated with correlative compared to appropriative rights. High levels of water scarcity during drought reinforced these outcomes as correlative riparian rights allowed for a more equitable distribution of resource rents. For these reasons, the Supreme Court's adherence to a strict interpretation of reasonable use as established by English precented supported expansion of the pastoral industry and thereby, economic development. As a result, the common law of water rights in colonial NSW tended toward efficiency.

These findings present a couple of potential areas for further research. First, additional comparative work could be undertaken to examine whether common law outcomes in other Australian colonies mirrored efficiency as in NSW. Given the tendency toward convergence in water law in Australia, especially in the twentieth century, this would provide further empirical tests of the robustness of property-right theory. More broadly, the high levels of government control over the allocation of many resources in NSW, for

example gold and water, from very early on in its history provides an interesting basis for comparative development studies between the US west and NSW. Given the important role of natural resources in NSW development (and more broadly Australia) such comparative work could further illuminate the impact of institutional arrangements on the path of economic growth in relatively rich nations. This would offer depth to recent studies analysing the impact of colonial heritage and institutional choice, particularly the importance of how colonialism affects institutional outcomes.[lxiii]

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Endnotes

[i] Anderson, T. L. and Hill, P. J. (1975), 'The Evolution of Property Rights: A Study of the American West', *Journal of Law and Economics*, 18(1), pp. 163-179; Rose, C. M. (1990), 'Energy and Efficiency in the Realignment of Common-Law Water Rights, *Journal of Legal Studies*, 19(2), pp. 261-296; Scott, A. and Coustalin, G. (1995), 'The Evolution of Water Rights', *Natural Resources Journal*, 35, pp. 821-980; Kanazawa, M. T. (1998), 'Efficiency in Western Water Law: the development of the California doctrine 1850-1911,' *Journal of Legal Studies*, 27(1), pp. 159-185

[ii] 9 Geo. IV. c83

[iii] Section 24 stated: "That all Laws and Statutes in force within the Realm of England at the Time of the passing of this Act, (not being inconsistent herewith, or with any Charter or Letters Patent or Order in Council which may be issued in the pursuance hereof), shall be applied in the Administration of Justice in the Courts in New South Wales and Van Diemen's Land respectively, *so far as the same can be applied within the said Colonies*; and as often as any Doubt shall arise as to the Application of any such Laws or Statutes in the said Colonies respectively, by and with the Advice of the Legislative Councils of the said Colonies respectively, by Ordinances to be by them for that Purpose made, to declare whether such Laws or Statutes shall be deemed to extend to the Colonies, and to be in force within the same, or to make and establish such Limitations and Modifications of any such Laws and Statutes within the said Colonies respectively as may be deemed expedient on that Behalf: Provided always, that in the meantime, and before any such Ordinances shall actually be made, it shall be the Duty of the said Supreme Courts, as often as any such Doubts shall arise upon the Trial of any Information or Action, or upon any other Proceeding before them, to adjudge and decide as to the Application of any such Laws or Statutes in the said Colonies respectively" (9 Geo. IV. c83). In the years following, two NSW Supreme Court decisions: *Ex parte* Nichols (1 Legge 123 (NSW 1839)) and Williamson v The New South Wales Marine Assurance Co. (2 Legge 975 (NSW 1856), stated that English court decisions were not binding in the colony. In *Williamson* the judgment specifically noted: "As to the decisions by the Superior Courts in the United Kingdom, the greatest respect were paid to these decisions when brought before the Court in the ordinary way, but the fact of one Superior Court having decided in a particular way, did not amount to a sufficient reason why the Court here should alter its judgment" (2 Legge 975 (NSW 1856)).

[iv] The Supreme Court explicitly noted the coordinate jurisdiction of lower English courts in *Ex parte* Dunne. In this case, Martin C. J. stated: "The [NSW Supreme] Court, like the Queen's Bench, Common Pleas, or Exchequer, is a Court of coordinate jurisdiction. If it sees reason to differ in any case from any of these Courts, it may with propriety do so, in the same way as those Courts not infrequently differ from one another" (*Ex parte* Dunne, 13 NSW (L.) 210, 217 (1875)). However, the Supreme Court was bound by decisions of the Privy Council.

[v] Prior use in England was overturned by Lord Denman's decision in Mason v Hill (10 Eng. Rep. 692 (1833)). In this case Denman systematically invalidated much of the fundamental principles of prior use that had developed since the 1600s (refer to Scott and Coustalin 1995, pp 863-868 for a detailed analysis of the decision).

[vi] Cases that implemented the reasonable use rule of riparian rights in NSW in line with English precedent were: Cooper v Corporation of Sydney (1 Legge 765 (NSW 1853)); (Lord v Commissioners of the City of Sydney (12 Moo. P.C. 473, 14 Eng Rep (1859) (NSW)); Hood v Corporation of Sydney (2 Legge 1294 (NSW 1860)); Pring v Marina (5 NSW (L.) 390 (1866)); and Howell v Prince (8 NSW (L.) 316 (1869)).

[vii] Posner, R. E. (2003), *Economic Analysis of Law*

[viii] Rose, supra note 1

[ix] Scott and Coustalin, *supra* note 1

[x] 81 Eng. Rep. 280 (1625)

[xi] Lauer, T. E. (1963), 'The Common Law Background of the Riparian Doctrine', *Missouri Law Review*, 28, pp. 60-107; Scott and Coustalin, *supra* note 1

[xii] *Id.*

[xiii] Rose, *supra* note 1

[xiv] 6 East 208, 102 Eng. Rep. 1266

[xv] Lauer *supra* note 11; Scott and Coustalin, *supra* note 1

[xvi] Rose *supra* note 1

[xvii] 3 Caines R. 307, cited in Rose 1990

[xviii] Rose. *Supra* note 1
[xix] 4 Mason's U.S. Rep. 400
[xx] Scott and Coustalin. *Supra* note 1
[xxi] *Id.*
[xxii] 3 Exch. 748, 154 Eng. R. 1047 (1849)
[xxiii] 6 Exch. 353 (1851)
[xxiv] *supra* at note 7
[xxv] 6 Exch. 371 (1851)
[xxvi] Rose *supra* note 1; Scott and Coustalin *supra* note 1
[xxvii] Lauer *supra* note 11; Scott and Coustalin *supra* note 1
[xxviii] Umbeck, J. R. (1981), A Theory of Property Rights
[xxix] 3 Cal 249, 252 (1853)
[xxx] 8 Cal 136, 141 (1857)
[xxxi] 5 Cal 140 (1855)
[xxxii] Schieber, H. N. and McCurdy, C. W. (1975), 'Eminent-Domain Law and Western Agriculture,' *Agricultural History*, 49(1), pp.112-130; McCurdy, C. W. (1976), 'Stephen J. Field ad Public Lands Law Development in California, 1850-1886: a case study of judicial resource allocation in nineteenth-century America', *Law and Society Review*, 10(2), pp. 235-266; Kanazawa *supra* note 1
[xxxiii] McCurdy *supra* note 32
[xxxiv] Biddle Boggs v Merced Mining Co., 14 Cal 279, 374 (1859), cited in McCurdy 1976.
[xxxv] Rose *supra* note 1; Kanazawa *supra* note 1
[xxxvi] Kanazawa *supra* note 1
[xxxvii] Pisani, D. J. (1987), 'Enterprise and Equity: A critique of western water law in the nineteenth century,' *The Western Historical Quarterly*, 18(1), pp. 15-37
[xxxviii] The term 'free population' is used here to distinguish those who emigrated to NSW of their own free will during the period, exclusive of military personnel and convicts.
[xxxix] Roberts, S. H. 1924. *History of Australian Land Settlement*
[xl] Grants were provided to all category of settler, including free settlers, military personnel, freed convicts, and administrators (higher ranked military).
[xli] Wakefield's belief was that widespread settlement involved wilful dissipation of resources (Perry, *Australia's First Frontier*. 1963). Edward Wakefield (1796-1862) was the most influential of British colonial theorists writing during the 1830s (Kociumbas, *The Oxford History of Australia*. 1988). He argued that Australia suffered from a shortage of wage labour due to the reliance on convict labour, excess free land and, dispersed settlement. Therefore, land should be sold at a 'sufficient price' with the proceeds of sales going to capitalists to pay for importing free labour to work for them. This would transplant to new colonies a well balanced and healthy British society and civilisation, remove redundant population from Britain and, make possible the establishment of a legislature elected by colonists.
[xlii] Vamplew, W. 1987. *Australian Historical Statistics*. By 1830 the population of NSW numbered 46,958 of which, 26,702 were free settlers and sheep numbered over half a million (Roberts, *History*. 1924).
[xliii] Vamplew, W. (ed.) (1987), *Australian Historical Statistics*
[xliv] This system was created under the Squatting Act (1836).
[xlv] It would be reasonable to suggest this reduced squatters' incentives to undertake large capital investment on their properties however, the extent of this effect would rely on counterfactual analysis.
[xlvi] Bird and Osborne, *Osborne's Concise Law Dictionary*. 1983
[xlvii] Land redistribution was attempted in the 1860s during which legislation was enacted to reduce the size of areas subject to pre-emptive rights.
[xlviii] White, *Mastering Risk.* 1992
[xlix] There was also little conflict over water between the two sectors because water use in gold mining was highly regulated where users acquired rights under administrative regulations rather than common law riparian rights.
[l] Roberts (1924) notes that over the period of selection eight sections out of every nine passed to original occupants and, by 1883, over eight million acres of colonial land was owned by 96 individuals.
[li] The Australian High Court determines inter-state conflicts and issues where the states and the Commonwealth government are in dispute. Generally, these cases are concerned with interpretation of the Australian Constitution. Prior to federation, inter-colonial conflicts, usually disagreements about the

interpretation of Imperial legislation would defer to the Privy Council. However, this court was generally reluctant to involve itself in colonial affairs. The Judicial Committee of the Privy Council continued to be the final court of appeal until the *Australia Act* (1987).

[lii] Rose, 1990 *Supra* note 1

[liii] 1 Legge 765 (NSW 1853); 8 NSW (L.) 316 (1869)

[liv] 1 Legge 765, 771 (NSW 1853)

[lv] 1 Legge 765, 771 (NSW 1853)

[lvi] 8 NSW (L.) 316, 319 (1869)

[lvii] 5 NSW (L.) 390 (1866)

[lviii] *supra*, 396

[lix] *Id.* 396

[lx] Kanazawa *supra* note 1

[lxi] Rose *supra* note 1; Scott and Coustalin *supra* note 1; Kanazawa *supra* note 1

[lxii] 6 Exch. 353, 371 (1851)

[lxiii] Such studies include: Sokoloff and Engerman, 2000 and Acemoglu et al. 2001, 2002.