

# Toponymic constraints in Wemindji

**APPROVED**

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*Research by Eugene Hunn (1996) suggested that toponymic density and population density are roughly equal for a range of indigenous groups across North America. In Wemindji, Quebec, historic and current toponymic and population data support Hunn's observation. I demonstrate that toponymic constraints are real by holding the number of traditional toponyms (898) as a background constant, and estimating the growth of Wemindji's population from 1960 to 2010 based on knowledge held by local experts. Measurements from historic air photographs assumed toponymic growth proportional to the area within the limits of Wemindji town development. A set of 78 new town place names provide a baseline for that measurement. Relative to toponymic density, population density steadily increased from 1960 to 2010, with a graph depicting the two densities suggesting equality in approximately 1995.*

Keywords: placenames, James Bay, toponymy, ethnoecology, indigenous mapping

## Les contraintes toponymiques à Wemindji

*Les travaux de recherche réalisés par Eugene Hunn (1996) ont pu démontrer que la densité toponymique et la densité de la population chez divers groupes autochtones partout en Amérique du Nord sont sensiblement égales. Les observations faites par Hunn sont corroborées par les données relatives à la population et à la toponymie actuelles et historiques de Wemindji, Québec. L'importance bien réelle des contraintes toponymiques est mise en évidence en considérant le nombre traditionnel de toponymes (898) comme une constante de fond et en se référant à une estimation de la croissance de la population de Wemindji entre 1960 et 2010 qui provient des connaissances détenues par des experts locaux. Des mesures effectuées à partir de photographies aériennes historiques tenaient pour acquis que la croissance toponymique était proportionnelle à la superficie du territoire urbanisé de Wemindji. Les 78 nouveaux noms de lieux apparus dans le village fournissent une valeur de référence pour cette mesure. De concert avec la densité toponymique, la densité de la population n'a cessé de croître entre 1960 et 2010. Les deux densités sont présentées sous forme d'un graphique indiquant que l'égalité fut établie vers 1995.*

Mots clés : noms de lieux, Baie James, toponymie, ethnoécologie, cartographie autochtone

## Introduction

This article is part of a debate that goes back to Hunn (1994) and Kelly (1994). Hunn examined the idea of a “magic number” of place names (500) an individual may know, while Kelly, in a response to Hunn, critically examined studies claiming 500 as a magic number—or the maximum population a given landscape, constrained by climatic or other factors, may accommodate. Hunn provided evidence for the

real existence of a magic number (in his paper he looked specifically at toponyms), while Kelly provided evidence against, citing earlier studies in anthropology that had used single-variable environmental factors to make claims about population density constraints. It was precisely these oversimplified and methodologically flawed earlier studies upon which Hunn based his own observations and claims; this fact, according to Kelly, significantly weakened the former's claims (Kelly, 1994, 437).

Hunn (1996) also provided evidence for collective toponymic constraints with his graph showing equality between toponymic density (number of toponyms, or place names, per unit area) and

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1 population density (number of individuals per unit  
2 area) across widely dispersed North American  
3 indigenous groups. Hunn speculated that the con-  
4 straining factor ultimately stems from individual  
5 limitations in human cognitive (semantic) space. The  
6 evidence presented in this article provides support  
7 for both individual and collective toponymic con-  
8 straints in Wemindji.

9 Scientific exploration of toponymic constraints  
10 necessarily bridges knowledge from an array of  
11 academic disciplines, including anthropology, ecol-  
12 ogy, geography, and cognitive science. A broad  
13 background of theoretical knowledge driven by  
14 unresolved debates or suggestions by Hunn (1994,  
15 1996) drives exploration of the following two  
16 questions: Do constraints affect the number or  
17 density of toponyms or populations within a given  
18 (bounded) region? What, if any, factors (i.e., area,  
19 population density, cognitive limitations) limit  
20 growth in the number of toponyms within that  
21 region? These questions are motivated by research  
22 into the transmission of intergenerational indige-  
23 nous knowledge about place in Wemindji, Quebec  
24 (Eades 2010); by unresolved aspects of the debate  
25 described at the beginning of this article; and by the  
26 recent re-appearance of magic numbers in topony-  
27 my and ethnoecology (Hunn and Meilleur 2010).

28 During two stays in Wemindji (see Figure 1), in the  
29 summer of 2008 and the winter of 2010, I introduced  
30 my topic—preservation and transmission of inter-  
31 generational knowledge and heritage—to key in-  
32 formants. At the same time, I incorporated myself  
33 into everyday life in Wemindji. Community members  
34 identified local demand for discussions about place  
35 names as indicated by local initiatives such as  
36 cultural heritage week, which includes a yearly  
37 commemorative journey and return to the original  
38 site of a traditional settlement where ancestors of  
39 present day Wemindji residents lived, 40 kilometres  
40 south of the present Wemindji site. My placement in  
41 Wemindji had been made in conjunction with a  
42 multi-disciplinary team of McGill and Concordia  
43 University researchers led by Colin Scott, whose  
44 work and ties to the community extend through  
45 three decades. Mapping place names in Wemindji  
46 was identified as an essential part of the Paakum-  
47 shumwaau—Maatuskaau Protected Area Plan, a So-  
48 cial Sciences and Humanities Research Council  
49 funded project, the details of which our team was  
50 tasked with providing. From the start this plan was  
51 identified by Cree elders and community leaders as

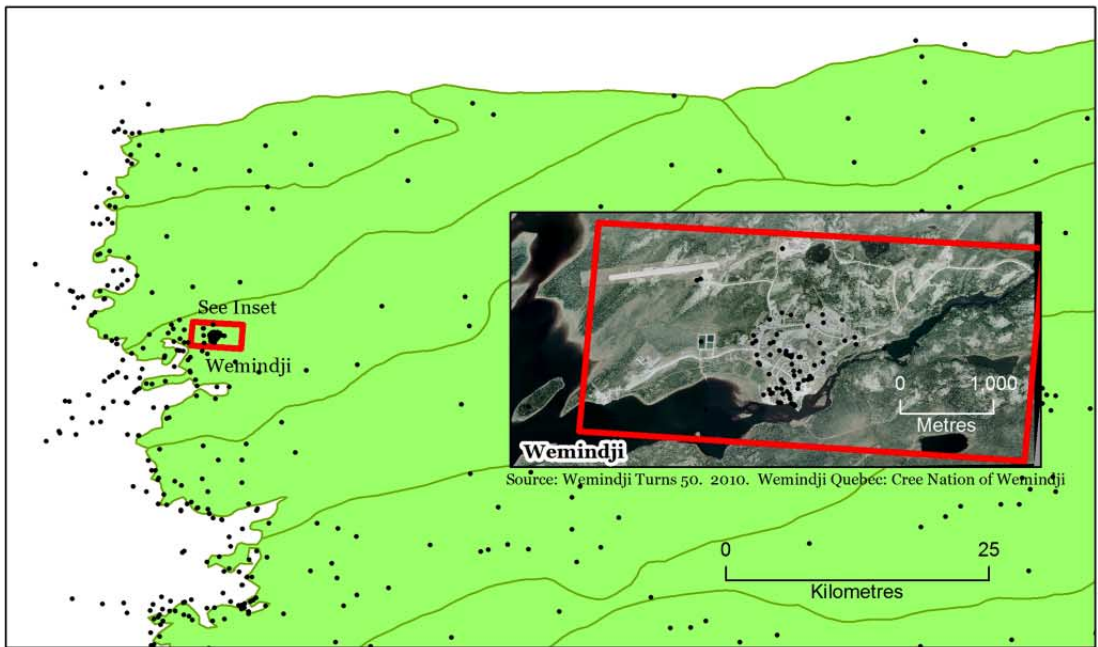
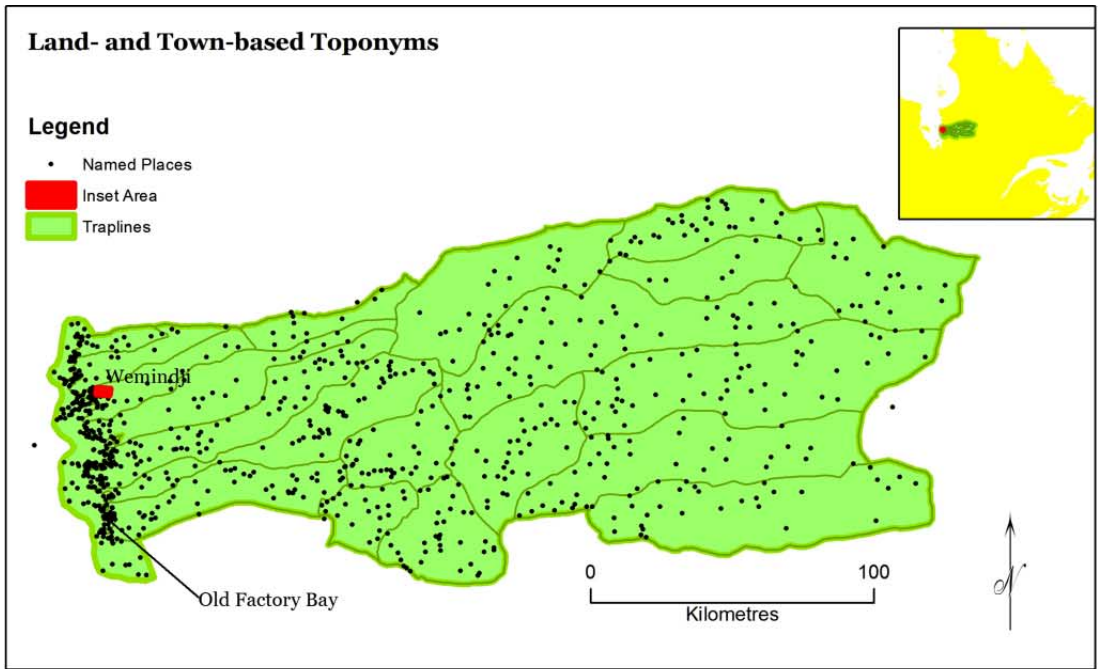
essential to local sustainability in the face of large-  
scale mining and hydroelectric activity in eastern  
James Bay, to which Wemindji has remained rela-  
tively unexposed, compared to other eastern James  
Bay communities (see Wilson 2008).

Advancement of traditional values is at the  
forefront of concern as the village experiences rapid  
change, both demographically and culturally, espe-  
cially over the last 50 years (as described in the case  
study below). During my stay I was confronted by a  
clash of traditional and modern (see Eades 2012)  
values and these, in turn, were reflected by changing  
toponymic structures. Where I had not thought  
much about ‘magic numbers’ or toponymic densities  
before, I began to see the applicability of these terms  
in an attempt to tease out the meanings of  
toponymic change as indicator, or proxy measure,  
of greater changes in eastern James Bay.

## Theoretical framework

With regard to the number 500, there seems to be  
confusion between what I call the “placed individual”  
and the “individual place.” Toponymic density refers  
to a collection of places rather than a specific named  
place in which individuals are placed. Place names  
refer to individual (named) places. An abstract  
concept of place as a category is not something we  
can imagine (or draw) unless an actual place (i.e., not  
an abstract category) is specified by the use of a  
name for a place. Only through the use of a name is a  
concrete place (as opposed to the abstract category  
of place) evoked (Basso 1996; Thornton 2008;  
Johnson 2010; Johnson and Hunn 2010).

Place names are tools for the evocation of specific  
places that in turn serve specific needs (e.g., the  
location of material or spiritual resources necessary  
for survival). Toponymic density, on the other hand,  
evokes an image of labelled data points on maps or  
geographic information systems. Toponymic density  
as a constraint does not make sense at the level of the  
individual. The latter is constrained by two things: his  
or her ability to move on the land and interact with  
(named) places; and semantic space in the brain  
(Hunn 1994, 1996) available for storing information  
(including names) about places. Hunn’s 1996 paper  
and his subsequent ethnoecological work go well  
beyond narrow focus upon quantity or correlations  
in place naming, forging new conceptualizations of  
folk-biological and ecological classification (see



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Projection/Datum: UTM Zone 17, NAD 83 Cartographer: Gwilym Eades Date: January 15, 2013

**Figure 1**  
Wemindji

Johnson and Hunn 2010). Likewise, researchers working with Inuit elders have, through the production of gazetteers and academic works, demonstrated and delineated precise senses of boundary as defined not only by both toponymic extent and density in indigenous lifeworlds, lands, and developments—but also by ways in which toponyms are used daily for life-sustaining activity (Muller-Wille 1987, 2001; Collignon and Muller-Wille 2006).

Collective/individual aspects of toponymy are reflected in scales of toponymic clustering. Modern individualized life (cf. Morantz 2002) in Wemindji is reflected in a very close, dense patterning of toponyms. Individual homes are not, for instance, considered to be named places because they are private spaces. Collective traditional life is reflected in a dispersed regional pattern of toponyms named in accordance with ancestral respect for spiritual and material presences on the land (Basso 1996; Thornton 2008). Modern named places, on the other hand, include public spaces such as malls, businesses, arenas, roads, and other town sites. Commonality between town and traditional named places lies in the collective and resource-focused nature of both. Table 1 gives a representative sample of both land- and town-based toponyms and their meanings.

It is the collective, functional nature of toponyms that lends them to performance as replicable linked sets, as in the case of the commemorative return to the traditional settlement in Old Factory Bay, transmittable between generations of Cree individuals (Eades 2010). “Functional” in this context means place names have functions beyond tagging, much like a knife serves functions beyond cutting vegetables. Using this analogy of functionality, the knife could also be used as a screwdriver, and likewise there are other uses for place names. Place names serve as points of condensation around which stories are told about the land, and when those stories are told by elders in the presence of youth, intergenerational knowledge transmission is facilitated at the same time.

There is a separation between the mind that holds the name and the place to which it refers. For the Cree on the land, the place name will be meaningful to the extent that it has been performed (i.e., the place to which the name refers has been seen firsthand and interacted with); as such there is a subjective aspect to place consciousness and indeed to the quality of what it means to be conscious in

**Table 1**

Representative toponyms and their meanings

**Land-based:**Lakes and Rivers*paakumshumwaau siipii* (Old Factory River)*paakumshumwaau sakhiikiin* (Old Factory Lake)*mwaakatuu siipii* (Loon River)Spiritual Place*chipitukw* (Ghost Dwelling)Human (body or part)*utiikanistikw siipii* (Shoulder Blade River)*mitisiwaayaapiistikw siipii* (Umbilical Cord River)Locational (proximity or topology)*aapiitukamaach* (parallel beside lake)*maataasaakw* (junction of rivers)Historical/mythical*sekaapaayaasuu saakhiikiin* (named after an old man who had only one good leg and travelled by sitting on a toboggan and pushing with his good leg and one arm)**Town-based:**Transportation

Georgekish Road (Wemindji chief, reigning from 1933–1958)

Indoho Road (‘he is hunting’)

Business

Sibi Gas (Sibi refers to river)

Tawich Development Corporation (Tawich means the bay)

Northern Store (food store)

Institutional

Maquatua Eeyou School (refers to both the Loon River and to the Cree people)

SOURCE: (Eades, 2012)

general (cf. Edelman 1992, 2006). This qualitative aspect of place is relevant to larger connections extending beyond the numeric analysis undertaken below, and provides a link between the latter, detailed analysis and a broader literature on categorization, the mind, and spatial cognition (Lakoff and Johnson 1999; Levinson 2003; Mark et al., 2010; Johnson 2010), not to mention geographies of place (cf. Cresswell 2004) and political or power-laden aspects of place naming practices (cf. Vuolteenaho and Berg 2009).

For the Cree on the land, the experience of what it is like to “be there” is evoked by the name of the place referred to, but only if the experiencing individual (i.e., a Cree individual) has actually been there (i.e., at that place on the land) (cf. Basso 1996; Wood 2010; Johnson 2010). As a magic number, 500 makes sense within a paradigm of the functional mind, but it cannot be divorced from mindfully embodied activity. If, as I posit here, the area of collective action and embodied activity defines minds that combine toponyms into meaningful patterns of activity, then the

number of toponyms is limited also by technologies that enable (or constrain) that activity upon the land. Both cognitive and embodied constraints define toponymic limits.

## Case Study

Wemindji, one of twelve Cree communities in northern Quebec, Canada, is located on the eastern shore of James Bay which lies to the south of, and is joined to, the much larger Hudson Bay. This community, like others in the region, has seen a series of transformations. These include contact with Europeans, colonization, the building of fur-trade partnerships between the Cree and the Hudson Bay Company, Christianization, hydroelectric development, and struggles with provincial and federal governments for local control of traditional and economic activities on Cree hunting and trapping territories (Francis and Morantz 1983; Hornig 1999; Morantz 2002). Combined, these processes and events have produced a layer or apparatus of post-contact cultural materials, capabilities, and sensibilities thick enough to cause alarm about cultural obfuscation, loss, and assimilation, but not thick enough to erase intact traces of continuous Cree culture including, for our purposes here, place names.

Place naming on Wemindji Cree lands is not, in fact, a straightforward process of replacement of old names by new names, nor is the new cultural layer really a layer at all. Rather, I suggest it is more productive to see it as a web (cf. Albert and LeTourneau 2007). Place names, both old and new, connect to each other in very complex ways such that traditional and more recent spatial practices of movement for the purposes of securing livelihoods on and with the land become entangled. In the following study, conducted using data collected during the winter of 2010 in addition to an existing database, I untangle place names as locally produced and observed from 1960 to the present day.

In 1960, living in a traditional settlement, ancestors of the current residents of Wemindji moved approximately 40 kilometres to the north, from an island at the mouth of *paakumshumwaaushtikw siipii* (Old Factory River), to a new location on higher ground at the mouth of *mwaakatuu siipii* (Loon River). Isostatic rebound, an uplifting of the land after the melting of continental glaciers, in part

necessitated this move, as the depth of water around the island became too shallow for navigation. As this was a Hudson's Bay Company post, such a situation was intolerable. Without intervention the local economy, dependent upon the fur trade (with shipping lanes along the James and Hudson Bay coasts), would have suffered. There was also in the traditional settlement a catholic (residential) school and it was felt that future generations would suffer alongside the economy should the residents stay at the Old Factory site.

After the move, a process of sedentarization was accelerated. Traditional life was slowly transformed into town life. While many families still spend a portion of the year on the land gathering traditional foods known to be present at places often named to indicate that presence, a good deal of food is now obtained locally in stores. In the winter of 2010 I gathered place names of two types: town-based and land-based. This two-category system is not to be confused with an unproblematic traditional/modern binary (cf. Eades 2012), but rather follows scaled realities of town- and land-based life. Most place names, town- and land-based alike, are associated with securing resources for subsistence in the form of food, shelter or other spiritual and material (including transportation) necessities. In this study, I examine numbers of place names plotted against time from 1960 to 2010, tracking the transition from more traditional lifestyles on the island to the south, to a more urban-inflected local life on higher ground to the north. I justify an extensive focus on quantities based on, and in light of, the observation above—that toponymic constraints are theorized as primarily collective in nature.

## Methodology

Key informants (two local officials and members of prominent local families whose ancestors were part of the relocation of Wemindji) provided lists of families who made the original move from the southern to the northern (more recent) site, allowing for an estimation of the population of Wemindji in 1960 (assuming that about 50% of Wemindji lived permanently on the land at that time and that all permanent residents of the traditional village made the move to the north). That information, combined with Statistics Canada town profiles

**Table 2**  
Statistical Sources

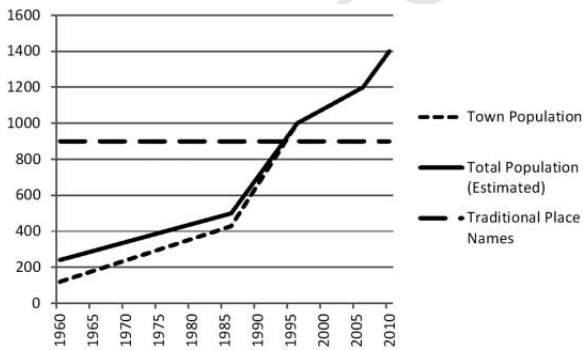
Year	Source	Town Population	Total Population	Land-based names
1960	Community Leaders	120 (estimated)	240 (estimated)	900
1986	Aerial Photograph	428 (estimated)	500 (estimated)	900
1996	Statistics Canada	1000	1000	900
2001	Statistics Canada	1100	1100	900
2006	Statistics Canada	1200	1200	900
2010	Wemindji Web Site	1400	1400	900

Year	Source	Town Place Names	Town Area (km <sup>2</sup> )	Wemindji Terr. (km <sup>2</sup> )
1960	Aerial Photograph	12	0.11	30000
1986	Aerial Photograph	24	0.26	30000
1996	(interpolated)	38	0.46	30000
2001	Aerial Photograph	60	0.65	30000
2006	(interpolated)	69	0.75	30000
2010	Local directories	78	0.85	30000

(1996, 2001, 2006), local statistics (Cree Nation of Wemindji 2010), and aerial photographs (dated 1986, 2001, 2004 and 2008; obtained from the local band office, GIS department) allowed me to piece together a picture of movement from south to north, as well as movement from traditional to local lifestyles, using number of toponyms as a proxy measure of those movements (see Table 2 and Figure 2).

Assuming the developed area in the town of Wemindji proper to be proportional to the number of town toponyms, I directly measured the devel-



**Figure 2**  
Population and place names vs. time

oped area of Wemindji at four points in time (see Figure 3). The area for 1960 was calculated based on the assumption, corroborated by the key informants, that the early Wemindji town site (i.e., by Loon River) consisted of what corresponds to the current downtown area only, including school, stores, band office, and a few businesses, totalling 12 named town places. The area of downtown, the layout of which has not fundamentally changed in 50 years, was measured on the latest (2008) photograph. Areal measurements at four points provided the profile showing growth in town-based place names. Town area is, however, for the most part irrelevant to calculations of both population and toponymic density, its relevance pertaining only to estimates of number of town place names. The only exception is the second population estimate in which an aerial photograph was used to provide an estimated population figure. The area used to calculate population and toponymic densities was the area of Wemindji territories as a whole (i.e., 30000 km<sup>2</sup>). This allows for direct comparison of densities longitudinally across the profile. Town place names were not included in toponymic density calculations, explaining the flatness of the toponymic density line. The number of town place names was considered too small to have a meaningful effect on results, with the number of town place names ranging between 1 and 9% of the total. As discussed below, however, the significance of town place names upon density is expected to increase in the future.



**Figure 3**  
Wemindji Change

Town place names were gathered using local maps (Cree Nation of Wemindji 2010) and telephone directories. These were validated and verified by local experts including employees of a local construction crew. The construction crew members were considered the most appropriate experts to consult regarding the current list of town place names because these individuals and their ancestors have been present continuously in the Wemindji town site during the last 50 years. They have witnessed and participated in the majority of new construction projects from Wemindji's inception to its present form. These individuals are better placed to validate and verify the list of place names than teachers, for instance, due to the former's presence in, and interaction with, all of the named places provided in our list. The latter may also have comprehensive knowledge of these sites but this knowledge is usually and mostly obtained by description rather than experience of each site as it takes shape in situ.

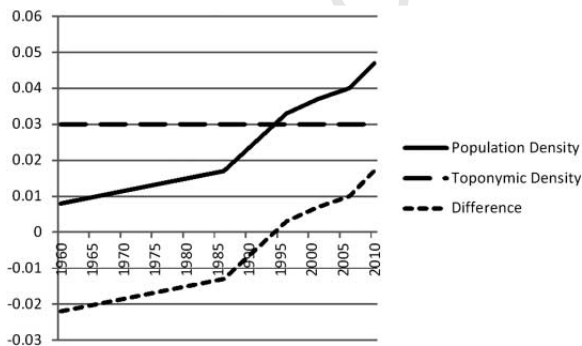
Gaps in data introduce potential error into the analysis, but these gaps, shown in Table 2 where interpolations or estimations are indicated, are either alternated with known figures that provide control on uncertainty, or they alternate in source. The first two population estimates are based on: 1) a list of families provided by two community leaders (one a primary author of *Wemindji Turns 50*), and 2) an estimate/interpolation drawn from the 1986 aerial photograph. It was also noted by the two community leaders that in 1960 approximately half of Wemindji Cree lived permanently in town (the other half continued to live on the land), and that the move to a permanently sedentary lifestyle was gradual, allowing for the construction of the dotted line portion of population profile shown in Figure 2. Gaps in the data were filled through the use of logical assumption, interpolation, and, where necessary, estimation. Gaps were not considered serious enough to prevent meaningful generalization from results, discussed below.

## Results

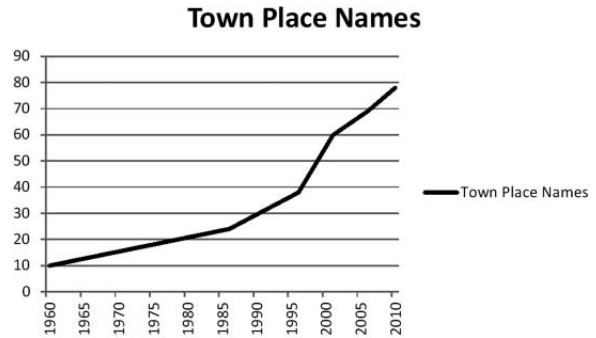
As mentioned earlier, Hunn (1994, 1996) noted an equality of population density to toponymic density in widely dispersed North American indigenous populations. The proportion on Wemindji Cree lands, based on comprehensive toponymic surveys (898 place names) carried out by Colin Scott and his colleagues in the 1970s, is, as of 2010, approximately 0.045 (population density) to 0.03 (toponymic density) place names per square kilometre, falling close to the line generated by Hunn. As noted above, the area used for this calculation was the total Wemindji territorial extent, rounded to 30000 km<sup>2</sup>.

Figure 4 shows the growth of population density from 1960 to 2010, with a crossover at equality between population and toponymic density occurring in 1995 as town place names grew in importance, and the population of Wemindji rapidly increased. Figure 4 also assumes both durability and constancy of traditional indigenous toponymy in Wemindji, as indicated by the horizontal dashed line showing toponymic density. This assumption carries an implicit regard for the comprehensive nature of the surveys mentioned above (Scott 1983; Basso 1996), and for the ability of the community to recover “lost” toponyms through commemorative and educational initiatives (Cree Nation of Wemindji 2010).

Figure 5 isolates growth in town place names. Figures 2, 4, and 5 suggest that population density in the 1960s was low compared to toponymic density. Local populations had only just begun to rebound from economic hardship introduced in part by a faltering fur trade (influenced in turn by both global



**Figure 4**  
Population and toponymic densities (per square kilometre) vs. time



**Figure 5**  
Town place names versus time

demand and by animal scarcities), but also by legacies of colonialism and government policies that had introduced disease (through the presence of foreign viral strains against which local populations were unprepared) and displacement (through institutions such as residential schooling) (Francis and Morantz 1983; Preston 2002; Morantz 2002).

## Discussion

The overall trend indicated by Figure 4 is upward between 1960 and 2010 with population densities increasing from 0.01 to approximately 0.045 across that time period. This observation will guide discussion in two directions. The first deals with differences between population and toponymic densities in the early part of the graph, while the second deals with possible future trends indicated by the later part of the graph. After these two main points have been covered, the discussion will move to addressing two possible objections.

First, Figure 4 indicates that there was a large difference (more than 0.02) between population and toponymic density at around the time of the establishment of the new town site of Wemindji. Some possible explanations for this difference were alluded to at the end of the results section, but they remain speculative. Possible explanations such as those mentioned above (i.e., economic or health problems attributable to the fur trade or to colonial and government policy) are for the most part qualitative observations and as such do not fit quite properly with the quantitative thrust of this article.



1 On the other hand, where qualitative approaches are  
 2 used (as described in the Methodology), the ap-  
 3 proach is very much focused upon obtaining  
 4 answers to questions of a quantitative nature that  
 5 they are not likely to illuminate questions of a  
 6 postcolonial and critical nature. This is an inherent  
 7 limitation to the approach taken here, but it does not  
 8 impact the main finding, that of the equality of  
 9 population and toponymic density in 1995.

10 Second, and flowing from that main finding, there  
 11 is reason to believe that the upward trend will  
 12 continue, resulting in a large positive difference  
 13 between population and toponymic densities in the  
 14 future. There will be a continued move away from the  
 15 line generated by Hunn (1996) as population  
 16 increases, but it will not be as drastic as it might at  
 17 first appear. The reason for this is that growth in  
 18 town-based toponyms will continue to the point  
 19 where their inclusion in the calculation would  
 20 become significant (i.e., when they make up greater  
 21 than 10% of the total number of toponyms). This  
 22 would indicate both growing urbanization of indig-  
 23 enous lifeworlds as well as a move away from land-  
 24 based life. Urbanization and centralization are a fact  
 25 of life in northern indigenous villages in Quebec and  
 26 in some places across Canada. While town- and  
 27 land-based life are often held in delicate balance,  
 28 there seems to be a point at which a village will  
 29 crossover to a predominant dependence upon wage  
 30 labour that supersedes the ability to be on the land as  
 31 much as would be desired. A possible proxy measure  
 32 of this crossover point is indicated by the point of  
 33 equality shown on Figure 4, where population and  
 34 toponymic densities were equal (i.e., 1995).

35 At this point in the discussion possible objections  
 36 are addressed. Figure 4 suggests that the proportion  
 37 of Wemindji's toponymic densities with respect to  
 38 population densities has been at or close to equality  
 39 in recent times. I anticipate and deal with two  
 40 possible objections (one hypothetical, and one that  
 41 comes up in conversation with non-experts on  
 42 toponymy) to the suggested significance of this  
 43 observation below. The first (hypothetical) objection  
 44 is that traditional and town place names represent  
 45 different, distinct (and thus not comparable) top-  
 46 onymies. This could be characterized as an apples  
 47 and oranges problem.

48 The second objection (often heard in casual  
 49 conversations about toponymy) refers to the idea  
 50 that an equality of toponymic and population  
 51 densities means that for each person there corre-

sponds a place name, with the implication that this  
 must therefore be a coincidence. This would further  
 imply that Hunn's correlation (1996) for several  
 North American indigenous groups is a correlation  
 without causation.

To address the first objection I return to the  
 observation above that place names serve functions.  
 They should not necessarily be viewed taxonomical-  
 ly as different kinds of categorical things. This view  
 is corroborated by Hunn and Meilleur (2010, 17–19)  
 who note that place names act as place holders for  
 the formation of ecotopes which are in turn human  
 constructions for efficient recall of large lists of  
 resources, primarily plants and animals. In their  
 words, "given that this is a spatial partition, the  
 formal properties will be 'partonomic' rather than  
 taxonomic ...[and] relations of contiguity are more  
 fundamental than relations of similarity" (Hunn and  
 Meilleur 2010, 17). More fundamental, then, than  
 splitting place names between those that are  
 traditional and those that are modern (though this  
 splitting is useful for the purposes of this article) is  
 the idea that named places are grouped together, in  
 some places more densely, in other places less so,  
 due to the functional and ecotopic relations between  
 those places. Wierzbicka (1984, 321), with reference  
 to collections of named objects that serve functions,  
 notes that "they stand for things of different kinds  
 that occur as groups, or collections, of things of  
 different kinds kept in one place."

To illustrate with reference to ecotopes, toponyms  
 fit into the picture in the following way. Hunn and  
 Meilleur (2010) use the number 500 to point out that  
 named places serve the function of keeping track of  
 locations of useful plants and animals. For 500  
 named places, each of which contains 500 animals  
 and 500 plants, they point out that, using only these  
 two concepts (toponyms and plant/animal names),  
 the cognitive load for an individual human would be  
 500 place names times (500 plant names + 500  
 animal names) for a total of 500,000 pieces of  
 information. They posit that this is the impetus for  
 indigenous delineation of ecotopes that occur across  
 different traditional societies in North America. The  
 ecotopes serve as bridges for combining named  
 places with the resources located at those places.  
 According to Hunn and Meilleur (2010, 18), "we  
 believe that naming ecotopes saves mental energy  
 and enhances the efficiency of subsistence activities  
 by facilitating the integration of these two massive  
 databases, the ethnobiological and the toponymic."

1 It does not matter what kind of place name is used to  
 2 add to this “database,” what matters is the resources  
 3 (and the functions they serve) that are located at the  
 4 named place.

5 The second objection requires some counter-  
 6 intuitive insight into the nature of toponymy vis-  
 7 à-vis population and the areas in which both reside.  
 8 The fact that there is a correlation (Hunn 1996)  
 9 between toponymic and population density does not  
 10 mean (as is often the first reaction to my introduc-  
 11 tion of this observation in casual conversation) that  
 12 the addition of an individual to a population  
 13 necessitates the addition of a toponym within the  
 14 area inhabited by that population. During the course  
 15 of a lifetime, each individual in a given area—in this  
 16 case in the traditional territories of the Wemindji  
 17 Cree—has meaningful interactions with hundreds of  
 18 named places. The number of named places with  
 19 which any given individual interacts during a  
 20 lifetime is highly variable between individuals of  
 21 the same community, and it also varies during the  
 22 course of an individual lifetime, and as a culture  
 23 evolves over longer periods of time. Any easy notion  
 24 of a place name for each person is easily confounded  
 25 by these observations.

26 Two further observations serve to address hesi-  
 27 tations (by those, Cree and non-Cree alike, to whom  
 28 this study is mentioned in conversation) about  
 29 equality between toponymic and population densi-  
 30 ties and the perception that this necessitates the  
 31 creation of a new toponym with the addition of a new  
 32 individual to a cultural area. The first is that cultural  
 33 activity is intense. This intensity can be measured by  
 34 carefully delineating meaningful areal units and  
 35 calculating the density of specific phenomena, or  
 36 proxies thereof, that occur within those units. I argue  
 37 here that toponyms represent such proxies. As  
 38 indicated above, toponyms help with the efficiency  
 39 of recall toward locating resources. An area that is  
 40 dense with names is therefore an area (or set of  
 41 places or ecotopes) that is rich with resources and  
 42 associated beliefs, transportation systems, and  
 43 technologies designed to deal with the practicalities  
 44 of the extraction and efficient use of those resources.  
 45 The second observation follows, that while the  
 46 meaning of place names may have subjective  
 47 associations, their significance is objective and  
 48 collective. It may be the case that each named  
 49 individual has a name and a home, but the name of  
 50 that home is variable, distributed, and ineluctably  
 51 tied to intersubjective and cultural connotations of

meanings not only of home but also of dwelling, skill,  
 technology, and the environment (Ingold 2000,  
 2007, 2010).

## Conclusions

The beginning of this article alluded to a debate that  
 is old but that is both unresolved and, I believe, still  
 worthy of serious debate as indicated by recent (re)  
 assertions that the number 500, for instance,  
 remains not only viable but unproblematic (Hunn  
 and Meilleur 2010). Using theoretical insights of  
 anthropologists such as Hunn (1994, 1996) and Kelly  
 (1994) I have attempted to recover this lost debate by  
 bringing to light new empirical data from eastern  
 James Bay Quebec. Measurement of toponymic  
 versus population densities over a 50-year period  
 in the town of Wemindji opened up new dimensions  
 of the debate, including variability over time.  
 Colonization and incorporation into state and  
 industrial interests driven by globalization have  
 brought Wemindji into the modern world. The  
 movement of the original residents of Wemindji is  
 part of a greater movement towards town life that  
 has been repeated in various forms and to different  
 degrees in other parts of James Bay, and also in other  
 parts of the world. The present analysis provides a  
 benefit in the replicability of its methodology for  
 other places and times where sufficient data exist to  
 allow the use of this method.

The most significant findings of this study are  
 twofold: first, that toponymic and population densi-  
 ties were equal in Wemindji in 1995; second that the  
 upward trend of population density in Wemindji is  
 expected to continue, with the implication that  
 population density will continue to exceed toponymic  
 density well into the future as improvements in  
 quality of life continue. These findings are qualified  
 first by the fact that Wemindji in 1995 represents only  
 one location at one point in time and, while this point  
 conforms to equality of population and toponymic  
 density and thus to Hunn’s line (Hunn, 1996), it  
 remains to be demonstrated whether replication of  
 the methodology achieves the same results in other  
 (proximate or distant) locations. The second qualifi-  
 cation is that while the difference between population  
 and toponymic density is expected to continue, the  
 difference will be less than that made apparent here  
 due to an increased significance (i.e., proportion) of  
 town-based toponyms.

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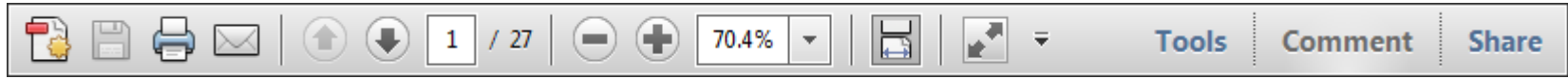
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USING e-ANNOTATION TOOLS FOR ELECTRONIC PROOF CORRECTION

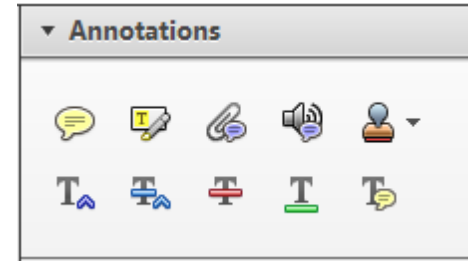
Required software to e-annotate PDFs: Adobe Acrobat Professional or Adobe Reader (version 8.0 or above). (Note that this document uses screenshots from Adobe Reader X)

The latest version of Acrobat Reader can be downloaded for free at: <http://get.adobe.com/reader/>

Once you have Acrobat Reader open on your computer, click on the Comment tab at the right of the toolbar:



This will open up a panel down the right side of the document. The majority of tools you will use for annotating your proof will be in the Annotations section, pictured opposite. We've picked out some of these tools below:



**1. Replace (Ins) Tool – for replacing text.**

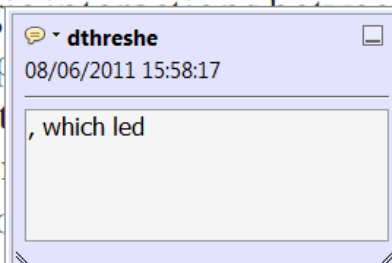


Strikes a line through text and opens up a text box where replacement text can be entered.

**How to use it**

- Highlight a word or sentence.
- Click on the Replace (Ins) icon in the Annotations section.
- Type the replacement text into the blue box that appears.

standard framework for the analysis of microeconomics. Nevertheless, it also led to the emergence of strategic behavior in the number of competitors in the industry. This is that the structure of the industry, which led to the emergence of imperfect competition. The main components of the industry, which are exogenous to the industry, are important works on entry by Shirasaka (1987) and henceforth. We open the 'black b



**2. Strikethrough (Del) Tool – for deleting text.**



Strikes a red line through text that is to be deleted.

**How to use it**

- Highlight a word or sentence.
- Click on the Strikethrough (Del) icon in the Annotations section.

there is no room for extra profits and the number of competitors are zero and the number of competitors (net) values are not determined by the number of firms. Blanchard and Kiyotaki (1987), in their paper on perfect competition in general equilibrium, show that the structure of aggregate demand and supply in the classical framework assuming monopoly is not affected by an exogenous number of firms.

**3. Add note to text Tool – for highlighting a section to be changed to bold or italic.**



Highlights text in yellow and opens up a text box where comments can be entered.

**How to use it**

- Highlight the relevant section of text.
- Click on the Add note to text icon in the Annotations section.
- Type instruction on what should be changed regarding the text into the yellow box that appears.

dynamic responses of mark-ups to cost changes. The evidence is consistent with the VAR evidence.

with well-labeled demand curves. The number of competitors in the industry is also consistent with the demand-



**4. Add sticky note Tool – for making notes at specific points in the text.**

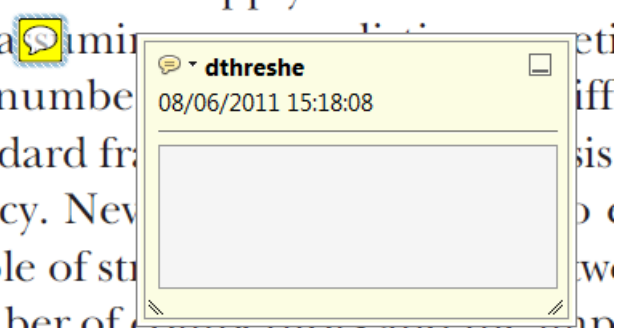


Marks a point in the proof where a comment needs to be highlighted.

**How to use it**

- Click on the Add sticky note icon in the Annotations section.
- Click at the point in the proof where the comment should be inserted.
- Type the comment into the yellow box that appears.

and supply shocks. Most of the time, the number of competitors in the industry is consistent with the demand curves. The evidence is consistent with the VAR evidence.



USING e-ANNOTATION TOOLS FOR ELECTRONIC PROOF CORRECTION

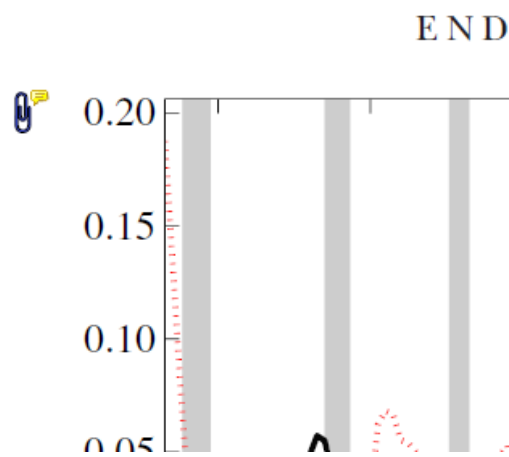
**5. Attach File Tool – for inserting large amounts of text or replacement figures.**



Inserts an icon linking to the attached file in the appropriate place in the text.

**How to use it**

- Click on the [Attach File](#) icon in the Annotations section.
- Click on the proof to where you'd like the attached file to be linked.
- Select the file to be attached from your computer or network.
- Select the colour and type of icon that will appear in the proof. Click OK.



**6. Add stamp Tool – for approving a proof if no corrections are required.**

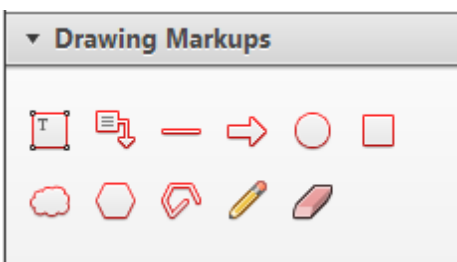


Inserts a selected stamp onto an appropriate place in the proof.

**How to use it**

- Click on the [Add stamp](#) icon in the Annotations section.
- Select the stamp you want to use. (The [Approved](#) stamp is usually available directly in the menu that appears).
- Click on the proof where you'd like the stamp to appear. (Where a proof is to be approved as it is, this would normally be on the first page).

of the business cycle, starting with the  
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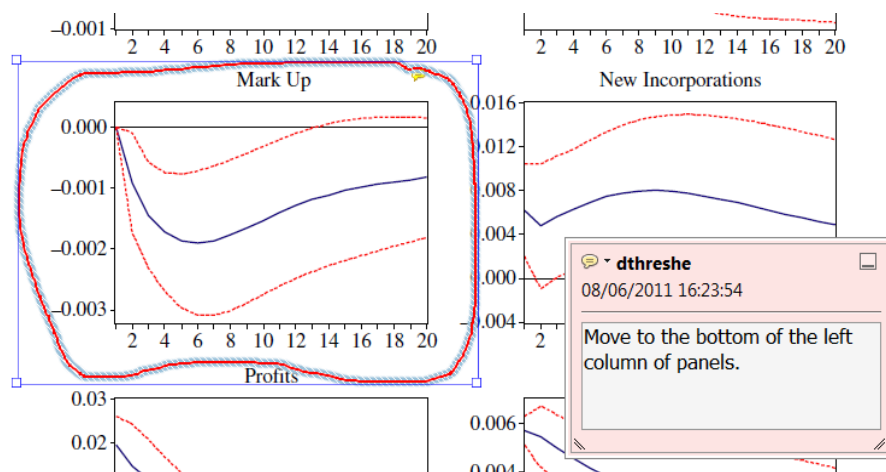


**7. Drawing Markups Tools – for drawing shapes, lines and freeform annotations on proofs and commenting on these marks.**

Allows shapes, lines and freeform annotations to be drawn on proofs and for comment to be made on these marks..

**How to use it**

- Click on one of the shapes in the [Drawing Markups](#) section.
- Click on the proof at the relevant point and draw the selected shape with the cursor.
- To add a comment to the drawn shape, move the cursor over the shape until an arrowhead appears.
- Double click on the shape and type any text in the red box that appears.



For further information on how to annotate proofs, click on the [Help](#) menu to reveal a list of further options:

