IG
Irish Geography

MAY 2018
ISSN: 0075-0778 (Print) 1939-4055 (Online)

http://www.irishgeography.ie

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How to cite: O'Mahony, E. and Murphy, M. (2018) Drawing lines on pages: remaking the Catholic parish map of Ireland as a tidal public geography. *Irish Geography*, 51(1), 25–44, DOI: 10.2014/igj.v51i1.1344

Geographical Society of Ireland
An Cumann Tíreolaíochta na hÉireann

Irish Geography
Vol. 51, No. 1 May 2018
DOI: 10.2014/igj.v51i1.1344

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Drawing lines on pages: remaking the Catholic parish maps of Ireland as a tidal public geography

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First received: 3 March 2017 *Accepted for publication: 25 September 2017*

Abstract: The Catholic parish is arguably the most fundamental unit of territory in Ireland. Over 1,300 of these units cover the entire land surface of the island. Their history and development tells the story of the accretion of institutional power by the Roman Catholic Church. Over the course of the nineteenth century, the Catholic parish became a means of organisation for an institutional church struggling with prohibition only later to become a key unit of social and political activity. Parishes are a vitally important way in which local identity in Ireland is connected with place. However, despite widespread use, the cartographical boundaries of Catholic parishes are not widely known. The boundaries have not been widely used on maps. This paper outlines the results of a project that attempted the initial digitisation of Catholic parish boundaries to make them more available.

In the first part of the paper, we outline the historical and geographical significance of the Catholic parish in Ireland. It is argued that the Catholic parish is both a social and a cartographic representation. The parish materialises a sense of place for Catholics and non-Catholics alike. In the second part of the paper, we report on the work of a project to digitally represent the boundaries of the Catholic parish and diocesan boundaries. It involved six years of work across two universities and a number of other state and non-state actors. More than a technical task, the cartographical representation of digital parish boundaries uncovered a series of local contestations. These contestations point to what are conceptualised here as a tidal geography: an understanding of the meaning of place that recedes and advances. The paper concludes with some challenges to the process of digitisation and a brief discussion of tidal geographies.

Keywords: *cartography, GIS, boundaries, religious geographies, secularisation*

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Introduction

In Ireland, the parish is considered a relatively stable territorial unit. It is frequently used in everyday conversation and is a common way for people to locate themselves. It is a popular designation of place in Ireland but parish boundaries are not widely known. While the Civil Parish boundary (of the Anglican Church) was mapped on to early editions of Ordnance Survey maps, its Catholic equivalent has rarely been represented cartographically. Maps of the Catholic parishes have not been represented officially in the same way. As the political authority of the institutional Catholic Church declines, with a resulting decline in Mass attendance (O'Mahony, 2010; Inglis, 1998), the meaning and significance of the Catholic parish is changing rapidly. It is a tidal geography and, at the moment, this tide is receding.

Building on work done by Smyth (1983), Whelan (1983) and Duffy (2007), this paper reports on the preparation of a digital map of Catholic parishes of the island of Ireland. Prior to 2008, no attempt had been made to create a digital boundary map of the Catholic parishes and dioceses of the entire island. Projects across a number of disciplines, including but not limited to Irish studies and geography, have researched individual parishes or collections of them but there is no database of all of the Catholic parish boundaries. As part of their Rural Electrification Scheme, the ESB represented some parish boundaries on their maps. We wished to produce a digital map of the Catholic parishes so that it could be used within, and adapted for, a geographic information system. The production process has been a very slow one but we feel we have produced a working version after a number of years' work. At the time of writing, we have built a database of all 1,360 known Catholic parishes. These have been digitised as a set of contiguous and non-overlapping polygons. We have also made some attempt to validate these data working within dioceses. This has presented its own challenges, some of which we outline here. Much more than a technical process, this is a project that prompts some questions about the creation of a set of boundaries and a cartography in recession.

Like other boundaries examined by geographers, Catholic parish boundaries are markers of inclusion and exclusion. This paper begins with an exploration of the ways in which geographers have used boundaries as such markers (Harley and Woodward, 1987; Monmonier, 1991). In this way, boundaries organise space and place by several processes of differentiation. We examine how boundaries are markers of social and cultural differentiation and to the role of the Catholic parish in Irish public life since the middle of the nineteenth century. In the second part of the paper, addressing current cartographic practice, we report on the project that led to the production of the digital parish boundaries. We provide a timeline for the production of the boundaries from the Diocesan maps in 2008 until the production of the parish boundary maps in late 2014. It is an account of a mixed-method project but mostly one of political accommodation, inter-agency meetings and periods of intense work. The complexity of the project, and not having easily comprehended boundary data, meant that a mixed-method approach was most appropriate. A validation process with local people to ground truth where the boundaries lie points to the ways in which we have tried to reveal this complexity.

In the third and final part of the paper, we outline a number of challenges that remain for the project. We examine how boundaries and maps are used within state-territorial and ecclesial policy as functional elements in the deployment of power. Each of these ways of understanding maps aids the story of the production of Catholic parish boundaries. We identify a number of outstanding issues about the mapping of a geography that is becoming less and not more relevant. By using a mixed method approach to our work, we propose that many of these issues represent what we have called a tidal geography. The digital boundary maps of the Catholic parishes of Ireland have a fluidity which often makes them unsuitable for direct cartographic representation. This particular geography, a way of knowing the world through digital Catholic parish boundaries, is currently receding. This tidal quality of parish cartography points to an unresolved question about who exactly the digital map of Catholic parish boundaries serves. That is, while the parishes reflect and represent an institution losing its significant political and cultural powers, who now needs the Catholic parish boundary drawn on a map?

The parish is linked intimately with Catholic practice and identity formation, even in a country experiencing secularisation. Regular Catholic Mass attendance (once per week or more often) has halved since the mid-1980s (European Social Survey, 2012). Parish boundaries have been used as a way to organise Catholic parish and wider social activity (Duffy, 2007) but remain ill-defined. They often relate to a general area where people believe it begins and ends but rarely relating to physical and topographical features. Occasionally, some may identify their parish specifically as the Catholic parish, perhaps using the physical location of a church. The Catholic parish has a largely social and cultural, not cartographic, presence on the landscape.

Cartography, culture and the public geographies of Ireland

The process to produce digital Catholic parish boundaries is a political one. It is a process of the inclusion of some and the exclusion of others. This dual inclusion and exclusion is not unique to the making of Catholic parish boundaries. The boundaries for Gaeltacht (Irish-speaking) areas materialise a form of governance that is important both commercially and culturally (Ní Bhrádaigh *et al.,* 2007). They exclude businesses that have sought state aid but did not receive it due to strict geographical conditions for its granting. The parish also has a rhetorical power. Reference to the parish in conversation places the speaker within a specific narrative about familiarity, an amorphous sense of being a local and embedded in a small network. The rhetorical power of the parish is deployed as part of a discourse of national unity (O'Carroll, 2002). The parish is used as shorthand for the equally nebulous concept of community in mass media (e.g. a 2016 *Irish Times* feature 'New to the Parish') and by the Gaelic Athletic Association as its basic unit of organisation. However, where the Catholic parish begins and ends is rarely publicly known. More specific knowledge of these boundaries would create a new form of public geography, one not yet formally supported on a nationwide basis by Ordnance Survey Ireland, the

state mapping agency. The agency played some role in the production process but there was a concern that any boundaries generated would need to be authenticated or given legal consideration in light of the agency's statutory role. Political processes like these, where place and belonging are organised through a tacitly understood areal unit, have a tidal quality. They recede and advance in political importance. For the Catholic Church, whose formal power is receding, knowledge of the parish boundaries is less urgent than it was six or seven decades previously.

Digital parish boundaries are a form of cadastre, defining ecclesial geographies, a designation that in turn may have policy value. The identification by jurisdictions like the UK of official school catchments has had a significant impact on contemporary policy in Ireland. This impacts upon other social geographies, for example, private house prices, occupational mobility and educational opportunity. In Ireland, where most primary schools remain linked with Catholic parishes, school catchment areas remain unknown publicly. While the paper does not extensively explore how digital parish boundaries impact upon public policy, their digital production does create an opportunity to critically examine school catchment areas among other geographies. The political nature of the production of the parish boundaries points to some important features of a potentially new public geography. This is a feature of what we propose here as the tidal geography of the parish boundaries. For the Catholic Church, that tide is in recession with waning political power. For other actors, mostly state ones, the tide advances. To help develop this concept of tidal geography, we lay out the ways in which Catholic parish boundaries are simultaneously markers of place and identity and also merely another cartographic database.

Boundaries as cultural formation and place markers

Geography's early development is intimately linked with devising and recording boundaries, both as part of fieldwork and for the establishment of it as a scientific discipline (Livingstone, 1993). This demand for and from a science of reading the landscape arose from a need to bound space. More than the discipline's development, knowing the extent of territory operates as a formative social process which links individuals to other known spaces. In this way, places become relational with each other, forming places of significance. These relations between individuals and their surrounding environment demarcates areas of shared ownership, cultures, responsibility, belonging and identity. In recent decades, cultural geography has been broadly concerned with this ontological commitment to place although often remaining implicitly stated (Trudeau, 2006). In particular, boundary marking is a way to demarcate belonging in a space. Such a sense of belonging is central to common social life and the creation of a shared history.

Belonging in a particular place maintains an imagined polity (Anderson, 1983) and is composed by both material and discursive practices (Trudeau, 2006). In this way, landscapes, and the senses of belonging and identity that are produced within them, appear to us as lasting and stable things. Catholic parishes, although rarely represented by the Church cartographically, were stable entities with a seeming endless supply of

new priests and parish workers until the 1990s. This continuity was central to their role as the basic unit of organisation for the Church. On a wider canvas, there is an intimate relationship between social space and the control of that space: who maintains and re-creates the order upon which bounded space is used. Trudeau (2006) argues that belonging is inherently spatial. Belonging is both spatial and a way to create and maintain boundaries. It is spatial because identifiable groups attribute meaning to the ways in which social life is done 'here' as opposed to 'there', e.g. drawing attention to the cooking and eating practices of migrant groups. If belonging is understood in spatial terms, it also aids in the creation and maintenance of boundaries. The 'here' is demarcated from the 'there' by virtue of a boundary, physically or culturally present. In contemporary and complex societies, this applies to the ways in which a wide range of service catchments, including those concerned with education, electoral politics and resource management, are linked with administrative units. For example, health resources are allocated on the basis of areal units devised by public services and health professionals. In this paper, we are not making any direct claims about identity and belonging in Catholic parishes; this has been examined in more detail elsewhere (for example, Antonsich, 2010; Yuval-Davis, 2006). However, in trying to understand what a tidal geography might look like, it is important to remember the relationship between belonging, political power and the maintenance of boundaries.

Maps are ways to mark place and specifically a way to designate ownership. The role of maps in the production of cadastres (legal mappings of land ownership) extends back to Roman Europe. Twelfth century Arab cartographers demarcated land and oceans to aid regional politics. Later uses of maps as place makers saw the hiring of cartographers to demarcate agricultural land holdings following enclosure in eighteenth century England (Harley, 1989) while early estate and town maps had similar legal and cadastral intents. In the nineteenth century, detailed mapping of cities like Paris and London was taking place, implying both a democratic process as well as defining the capacity to extend democratic rights to others. To know the territory, one had to gain a bird's-eye view and so cartographers such as Turgot and Rocque set out the parameters for mapping and the delineation of urban space. A key development of these place-making practices was the introduction of transport infrastructures onto copper and stone-plate public maps (Andrews, 2002). In the twentieth century, mass transport networks and the professionalisation of urban planning facilitated the more widespread use of maps in public. At the start of the twenty-first century, digital mappings of many varieties are ubiquitously available through handheld devices.

As representations of space, maps are never an accurate reproduction of that space. There is always a compromise to be made between these representations and the experience of being in the space that is represented. Withers (2007) has provided a useful summary of the ways in which maps provide a form of stadial thinking. This is a public imaginary that develops alongside Enlightenment thought of space being mappable. It includes an erasure of local knowledge and also the specification of agreed methods of the production of knowledge. However, this erasure of the local is not always evident.

The identification of mapping as an instrument of power with place-making practices is deeply embedded in Irish cultures. In particular, as Duffy (2007) has pointed out, there is a social and political significance to townlands, provinces and boundary commission maps. Ireland was one of the first European countries to be mapped comprehensively using a scientific method. The state mapping agency, Ordnance Survey Ireland, arose from the work of the British army, an occupying force on most of the island until 1922 (Andrews, 2002). Post-independence, and with the translation of place names between the Irish and English languages, the significance of local knowledge (but not necessarily its cartographic representation) increased. The symbolic attachment to place is hugely significant, with individual and collective identities shaped by the bounded location within which one is born, lives or otherwise identifies. In its infancy, the Irish Free State encouraged a cultural mapping project through primary schools (Irish Folklore Commission, 2014) which identified places with particular practices and language uses. These cultural boundaries are vivified by attachments to bounded place depending on location, scale and social contingency. The Catholic parish boundary maps are a very clear example then of that tension between stadial thinking and the intimate knowledge of places at other scales. Parishioners and their priests knew their parish areas well but there was never, so far as we can determine, a demand for their wholescale cartographic representation within the formal structures of the diocesan Church.

Boundaries as cartographic layers

In more recent years, the Central Statistics Office has developed a series of smaller spatial units which have entered, to a greater or lesser extent, into public usage (Foley *et al.,* 2005). To complement Electoral Divisions (used as sub-units of Electoral Areas within local government), the CSO has devised Small Areas. These units were devised using algorithms linked to specific address-point and road segments to identify broadly homogenous clusters of residences. They were produced by NUI Maynooth and the CSO as the basis for the collection of the data for Census 2011. Small Areas are nested wholly within Electoral Divisions, which in turn are nested into other layers of cartographic measurement. While the Electoral Divisions have designated names, the Small Areas are numerically-coded. Given their automated generation, these latter spatial units bear little relationship to how most people would understand their own neighbourhoods and communities of interest. However, their nesting within EDs was important in linking them to historic units. A postcode was introduced in Ireland in 2015, but it is based on individual buildings and cannot be aggregated into larger spatial units because the codes are not contiguously drawn points.

Changing technologies have meant that scale has played an increasingly important role in public mapping. At larger scales, boundaries can be perceived directly, for example, at the Greenwich Meridian Line in London, a global standard for time measurement. One can stand across the directly observed boundary and can connect this place, Greenwich, with other places around the world. These are not directly observable but imagined while at this place. These other places are, in our imaginations, on other scales. We imagine

ourselves moving 'up' scales: nations, regions, continents, hemispheres. This way of thinking about place and scale connects boundaries, territories, time frames and other parts of how we make sense of the vastness of our world. While the scale bar has persisted in the printed map until the present, it has become a more dynamic object within the visual field that is the digital map. As the user zooms in and out, scale is adjusted dynamically, becoming less significant as a central component of the mapping process. What is in view comes into most immediate focus, not the formally-measured scale.

Scale plays an important role in cartographic concepts like overlay, edge-matching, co-terminosity and visualisation. However, it is important to note that the drawing of a map depends on reliable source information. The availability of quantitative data that is deemed of sufficient quality has been seen as a prerequisite to good map making. Also, there are tensions inherent in the format of the source information. These tensions affect how maps are produced and identify the relative importance of metadata for the maps themselves. These can range from usable existing digital boundaries (relatively easy to work with) to more uncertain textual or oral descriptions (much harder to work with).

The base material used to devise a parish boundary digital database arose from an older paper Catholic parish map, drawn by one of the co-authors. This was a hand-drawn map and later digitally scanned. This document had no spatial grid co-ordinate and projection information. Duffy (and Keenan) in their mapping of the boundaries of the Clogher diocese hand-drew a set of boundaries based on townlands and other local knowledge (Duffy, 1993; Duffy, 2007). Ní Bhrádaigh *et al.* (2007) carried out a similar piece of work on producing a definitive boundary of the Gaeltacht areas. They used townland boundaries, as well as written and oral testimonies, to produce definitive boundaries that were contested to the last line. These maps were used to establish eligibility for government grants within these boundaries. The commodity value of having such digital layers that can be overlaid on top of one another is evident. This is not just in the visualisation of boundaries but in the ability to use those boundaries for detailed and rapid spatial analysis within GIS, something which is not possible with hand-drawn versions. The emergence in recent years of a critical GIS literature (often taking up earlier challenges) notes the capacity of subaltern groups and others to produce digital counter-cartographies of urban and non-urban places, often creating new publics within the process (for example, Young and Gilmore, 2013; Corbett and Peter Keller, 2005). Within these various contexts, and relative to a broader politics of cartography, we set about creating a digital Catholic parish boundary dataset.

The Project to Digitise Catholic Parish Boundaries

The process to digitise the Catholic parish boundaries began in 2008 when Eoin O'Mahony was able to offer a short summer studentship to Omar Sarhan, as part of a placement for an MSc course in GIS & Remote Sensing at NUI Maynooth (now Maynooth University). Sarhan spent six weeks trying to source or devise a method by which we could digitally represent Catholic Diocesan data. The Bishops' Conference had a need for a diocesan boundary dataset and this was the opportunity to devise a new digital spatial unit and

ally it with student learning. Sarhan compiled a large collection of historical and other maps of ecclesial and political boundaries and scanned them to a high quality where possible. The digitisation of the twenty-six Catholic Diocesan boundaries was attained in a few weeks; a short time later, he attached the 2006 Census data to the new shape files and, consequently, we were able to offer a range of Census data (albeit for the Republic only) for analytical use. In his role as social researcher with the Irish Catholic Bishops' Conference, Eoin O'Mahony showed the diocesan work to the secretaries of the Dioceses, asking each of them to cooperate in any way they could with the next task: digitising parish boundaries. We believed at that stage that each diocese would have at least a paper map of the parishes of the dioceses from which we could devise the digital boundaries. In Ireland, there is often an understanding of a single Catholic Church but in the summer of 2008, this project identified almost 26 different Catholic Churches in Ireland. It is not that each diocese is its own church; it is that each diocese maintains an identity specific to its own day-to-day administrative systems.

The Initial Cartographic Project

The physical and financial constraints of the initial project became apparent when we realised we would have to visit Diocesan offices across Ireland. In a six-week project, this could not take place and we dedicated Sarhan's time to a handful who had responded positively to the initial request for assistance. Kildare & Leighlin, Waterford & Lismore and Killala dioceses were our adopted models of good practice. Aside from this, Sarhan was able to work with a set of maps of Cashel & Emly's parishes drawn by a team of religious sisters in 1972 (unpublished) as well as Duffy's *Landscapes of South Ulster* (1983). These maps were valuable but were in paper form and related to an overlapping but different set of boundaries to the ones we wished to create. Again, scale and generalisation, as well as the non-georeferenced nature of some of these base maps, were significant issues in their reproducibility in digital form. Figure 1 below shows a selection of the diocesan boundaries along the west coast and some of their exclaves.

Following the production of the diocesan maps, progress was considerably slower. It became clear early on that the finer the detail available to the parish mapping component, the more likely there was to be a dispute over a boundary's precise location. While the diocesan boundaries can afford to be lacking in granularity, the parish boundaries became an altogether more contestable geography. Sarhan faced three principal challenges in the digitisation of the parish boundaries:

1. The unavailability at this stage of paper boundary maps with significant geo-referenced features: this meant that the paper maps were drawn at different scales and with quite different representations (from sharp lines to 3D prints) which affected an ability to geo-reference them for use as traceable underlays.
2. The relative unimportance of systematic mapping to weekly diocesan work: this was a wider issue in terms of the understanding or value placed by the different dioceses on using maps in place. There was a considerable range of approaches by dioceses from a genuine interest or attempt to draw diocesan and parish boundaries to ones

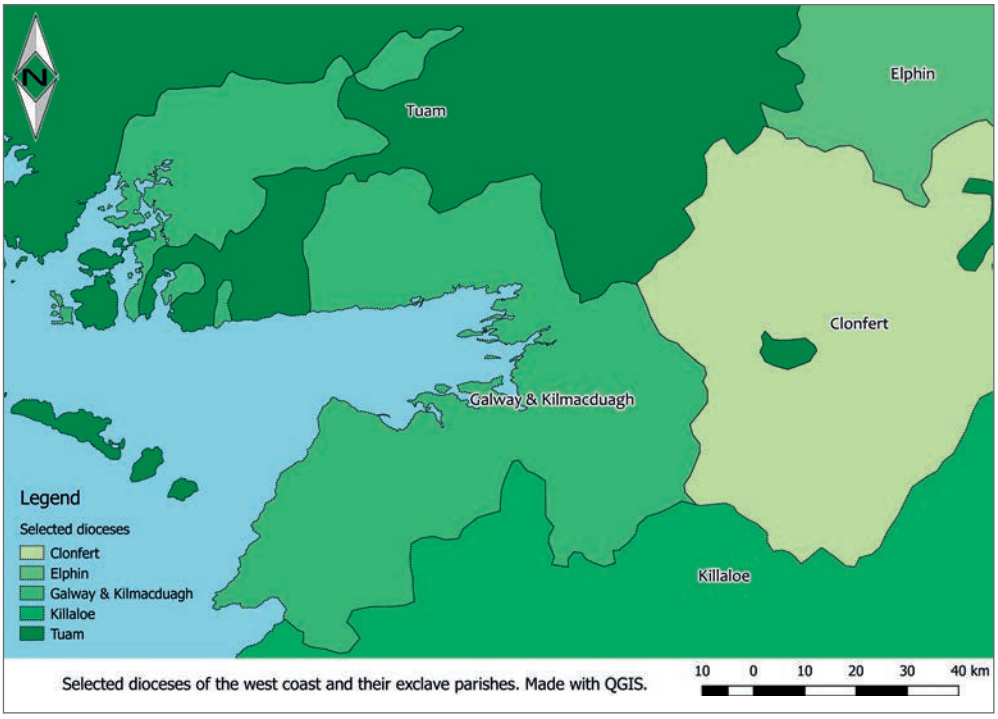


Figure 1. Selected dioceses of the West Coast and their exclaves

where no paper records existed. In this sense, we would contend that most Catholic parish maps are more social than cartographic. We return to this idea later in the paper.

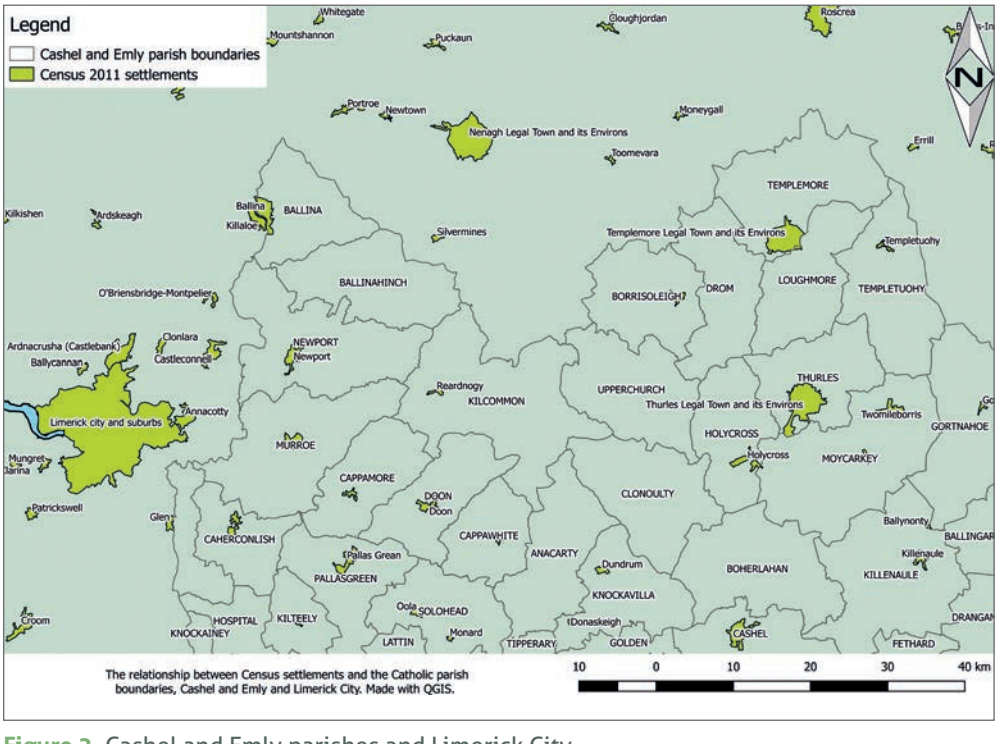
3. The relative importance of mental maps in defining the parish: a final issue that emerged was the difficulty in trying to bridge a gap between a physical boundary on the page/screen and the more oral/verbal knowledge used by diocesan and local experts in our dioceses of good practice. Here the difficulties in reconciling, for example, 'that farm is not in our parish' and the drawing of a sharp line to denote this statement were very evident.

At this stage of Sarhan's project, and the production of a limited number of parish boundaries, it seemed that digitising the remainder of the island's parish boundaries was an impossible task. The diocesan boundaries were used on a regular basis by Eoin O'Mahony in his research job and on the Bishops' Conference's website. The boundaries suited these usages for displaying large scale maps and some data. The production of the diocesan boundary maps was useful to some organisations and, in 2011, the Central Statistics Office made the boundary files available online alongside other boundary files. For the first time in public, people could derive their own Census 2011 datasets, using the diocesan boundary files. As an example of a tidal geography, the diocesan boundary files became publicly useful for a period immediately following their being made available on the CSO website for Census 2011.

The Parish Boundary Production Process

By the summer of 2013, the project involved UCC's cartographer Michael Murphy, Ordnance Survey Ireland and the Department of Geography, MU. Sarhan had since graduated and sought work elsewhere. The work conducted by Michael Murphy in UCC involved using townland boundaries to create what we believe are the Catholic parishes across the island. This production process involved several steps toward the creation of the new boundary.

The initial starting point was discussed by the authors and in consultation with a number of other interested parties, including the OSI, the NCG at MU, UCC and the CSO as well as the Bishops' Conference. An important initial step was to build on ongoing work by Michael Murphy arising from earlier work, to digitise a boundary set based on amalgamations of a townlands layer. Earlier work by Smyth (1983) and Duffy (1983) was built on and also reflected a good compromise between space and place perspectives. Townlands, very old and culturally emplaced building blocks, were small enough in size to be meaningful at a very local scale. While not always known widely amongst an increasingly urbanised public, townlands retain their cultural significance, particularly in rural areas. They are also available in fully-digitised form and hierarchically fitted within other administrative units.



The relationship between Census settlements and the Catholic parish boundaries, Cashel and Emly and Limerick City. Made with QGIS.

Figure 2. Cashel and Emly parishes and Limerick City

Within a GIS, the parish boundaries were identified using a geo-referencing process that involved the creation of a new code file stored in the attribute files associated with

the digital townland layer. Essentially the parish to which each townland was attributed was identified using a gazetteer. Once the relevant townlands could be matched to the parish they belonged within, that parish was given a code and this was listed in the database against its constituent townlands. Using a redistricting procedure and a dissolve geo-processing command, the GIS selected all the relevant townlands for a parish and dissolved all the internal boundaries to produce a new unit signifying the aggregated parish outline as a polygon. Figure 2 below shows the relationship between the CSO's settlements database and the derived parish boundaries for some of the Diocese of Cashel & Emly. The process was carried out on a diocese by diocese basis rather than county to county, given the complex overlaps and outlines involved.

We are aware of the technical aspects of multi-polygon and enclave diocesan geographies that arose during this process. This complicated the processing but we believe that it points to the difficulties of machine-led processes and capturing the complexity of culturally-developed boundary histories. Also, we acknowledge the issue of trying to ensure non-overlapping boundaries in processing, a common technical problem in re-districting work (Meredith *et al.,* 2007). Figure 3 below shows the parish of Multyfarnham in the Diocese of Meath and the townlands within this parish. It illustrates some of the challenges in ground-truthing the parish boundaries. In this acknowledgement, and as we outline later in the example of Waterford city, a larger project would involve us in taking decisions to override competing local claims. Such local claims are by no means trivial. The evaluation of these claims, although not part of this project, would be a significant task in itself.

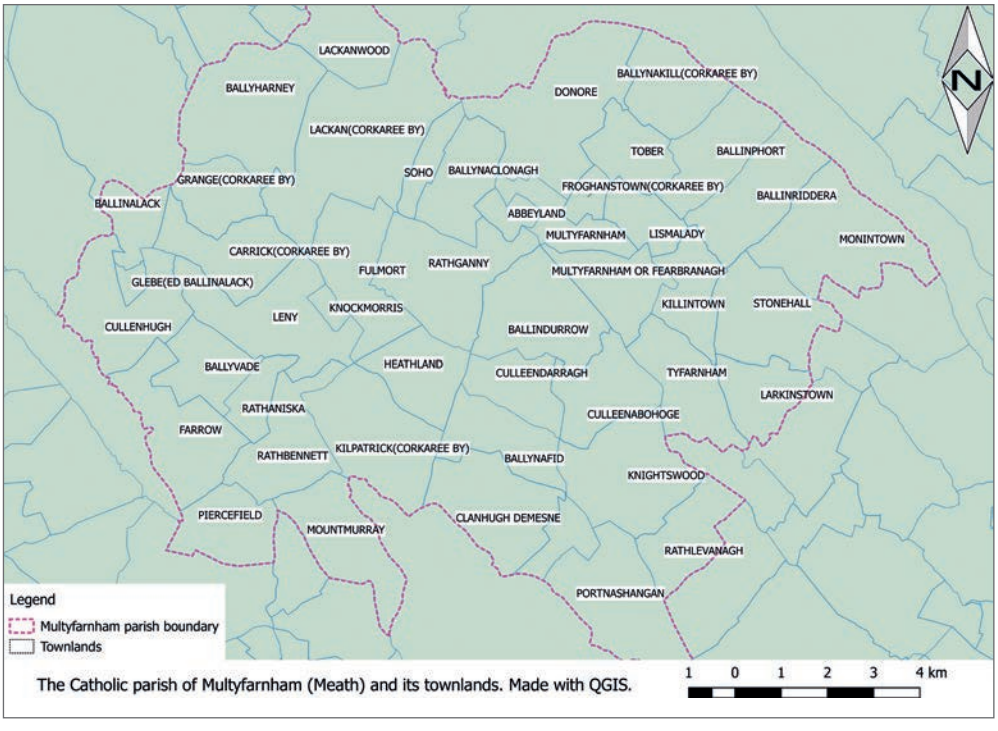


Figure 3 Parish of Multyfarnham and its townland

Once a definitive map of the parish in each diocese was produced, based on the processing of townlands, the next step was to take what had been done and verify them with each diocese. This was initially done using Open Street Maps to a scale of at least 1:10,000 for each parish where appropriate. This was a lengthy consultative process that involved sitting down with diocesan personnel to carry out a form of oral ground-truthing as to the veracity of our digitised boundaries with local place and context-specific knowledge.

This ground-truthing process is based on two key decisions. The first of these is the actual commitment to deliver a draft map on the basis that having a visible output deepens and improves the verification process. Were one to do it the other way around, it would, quite frankly, never be finished. Secondly, we recognise that the full verification from all dioceses will still take quite a long time to complete. This has encouraged us to document the process thus far, with the core identification that the draft map, apart from some small tweaks and edits, is substantially correct. Both the production of readable parish boundary maps for dioceses and the verification process resonate with the main argument being made here: the production of viable digital Catholic boundary layers for mapping purposes is a fluid process. The fluidity of the last part of the project, validation with dioceses, may well produce some significant tidal geographies. These geographies reflect the waning power of an institution with the capacity to verify effectively, recursively throwing up larger questions as to the maps' use within that institution. In short, at the very moment that the maps become more widely available, their use as instruments of territorial control becomes less pressing. This is the tidal geography of the parish boundaries for use within the Catholic Church. The project has managed to produce digital parish boundaries for all twenty-six dioceses. However, only a small fraction of these are currently validated by the dioceses. Validation would be an ongoing managerial project in itself and carried out in conjunction with the administration within the Irish Catholic Bishops' Conference. The slowness with which this process takes place reflects the fact that dioceses now have no organisational need for accurate parish boundaries, perhaps less than at any time since the onset of the devotional revolution (Larkin, 1972).

Validation Process

Based on these challenges in trying to advance our work, we realised that it was not merely a question of drawing a line from here to there. If it had been, it would have been undertaken long before this time. Instead, this became an attempt to understand the effect of drawing red lines on pages upon people's understanding of their own places. To devise digital boundaries involves local negotiation combining history, geomorphology and politics. It represents the mixed methods approach that we have mentioned already. We were not happy to confine ourselves to producing what we believed to be the Catholic boundary set for the island. However, once some validation of our drawn boundaries began, the very definition of the parish itself came into question. Scanning and geo-referencing maps of various qualities was time consuming and it seemed that no matter where we marked the boundaries, the local parishes were identifiable only as mental and

social constructs. By putting a red line around an area that we had identified as parish X, that area became contested. It was not contested as an image but as a construct of how that place is imagined. The next step in the project was to reconcile the definition provided by the cartographic image with a less tangible social construct.

Aware of these initial reactions to our maps, the validation process was tested when the project was asked to provide the digital parish boundaries of Waterford city. In 2011, the bishop of the diocese asked Eoin O'Mahony to contact two former City Council employees working with the Society of St Vincent de Paul to devise the parish boundaries of the city. The society, a national Catholic anti-poverty organisation, needed a more accurate map of the city parish boundaries so that each local branch (called a conference) could manage their own affairs according to the needs of the people who lived within the parish boundary.

We redrew a 1980s parish map of the city and presented an agreed map of the city parishes to the bishop. Each parish boundary had to adjoin each other parish's boundary, and local politics had to be negotiated over time. For instance, each parish's priest was to have sight of and agree with the proposed new parish boundary. This included dividing one housing estate in the west of the city in two because one side of the road included more working-class residents than middle-class residents. The parish priest would not accept the working-class residents within his parish and so the boundary divided the estate. This was negotiated between meetings by the conference members. If the map of the city's parishes represents who lives in the city, it became clear early in the validation process that some areas were inside the city's boundaries and others could not be. Not only were the outer boundaries of each of the eight parishes altered to take account of what we thought they should be, the boundaries of each parish were altered to accommodate the politics of the church in Waterford. The members of the Society of St Vincent de Paul, aware of these contradictions, insisted that the parish boundary should cut across an adjacent sports ground to facilitate the exclusion of those working-class residents from one parish. In this way, the Catholic parish is made real; it is a reflection of particular power relationships and authorised through the work of the diocese. They are the spatialisation of particular political formations and the basis for associational identity (Dwyer *et al.,* 2013, 9-12).

Devising the outer boundary of all of the city's parishes was a part of the project entirely within our control. While Michael Murphy's UCC work had devised the parish boundaries, the city's civil boundaries were not available. We were not yet aware of the specific geographies of the city and so several of the boundaries had to be changed in conjunction with the two members of the Society with whom we worked. When Eoin O'Mahony brought the drafted boundaries to Waterford for the first time, we first had to adopt a form of self-authorisation to make the required boundary changes. The process of boundary change was being facilitated through the diocese but it became evident that we were deciding the new boundaries as they arose. There was no single authority to decide what the boundaries were when it came to redrawing the internal or external boundaries. Unlike the concerns of the Ordnance Survey Ireland representatives, authorising the

parish boundaries on behalf of the diocese for the purpose of the Society of St Vincent de Paul was a fluid process in search of a determination by someone with the authority to do so.

Over the course of late 2012 and early 2013, the Society of St Vincent de Paul worked with priests and others in each parish to refine the red lines that Eoin O'Mahony had drawn. We met four times in all over a sixteen-month period to agree upon the boundaries. The parish boundaries were refined across three drafts in each of the eight parishes to ensure that they met with local understandings of each area. This was the first time many of the priests had seen a pictorial or cartographic representation of the parish in which they work. Some of the parish boundaries of the city centre align with the old city walls, only portions of which now remain in physical space and knowledge of which is even more tenuous. The parish boundaries at the city's edge remain largely uncontested and are bound by the river channel and its estuary – with lines presumed to lie in the middle of the estuary's flow. This is in keeping with some of the cartographical work done by Duffy (1983) and others where physical features help to create a recognised boundary. In April 2013, we presented a map of the city parish boundaries to the bishop and, with the two workers from the Society's Conference, we signed off on official maps. We also provided the Society of St Vincent de Paul with small area Census data in tabular format which are associated with the new parish boundaries. This was done using standard GIS techniques and in conjunction with CSO data and their spatial units. In September 2013, printed copies (on A0 sheets) of each of the eight parishes and the city parishes area as a whole were provided to the diocese and another copy was made available for the Society of St Vincent de Paul.

Were a similar process to be done with the remaining parishes within the diocese of Waterford, let alone the other 25 dioceses of Ireland, this verification process would take a considerable period of time. The dioceses would have to identify a need for this to be done, engage with the authors and decide, perhaps over a year or more, where the boundaries could be settled on. Aside from time, it would require considerable financial resources for printing and the work to be done to produce local parish maps for both verification and finalised maps. The capacity of each diocese to work with electronic mapping resources would also be limited.

Discussion

Boundaries as markers of continuity and change

The production of the digital Catholic parish boundary map is an exploration of a set of compromises. These are compromises between people and technology, image and text, local and central, space and place. It involved an attempt to create the foundation of a semi-definitive set of boundaries that respect the past, document the present, but also creates a usable set of data for the future. However, cognisant of these compromises, this project has the potential for greater analytical potential to shape future geographies for both the Catholic Church in Ireland and the Irish state. The fact that such a parish map

would be more widely available might open up public discussions on school catchment areas. There is a political need to alter the basis upon which schools are defined as a community resource. Although bisected by a politics of ongoing austerity and economic crisis, this need is concerned principally with religious divestment of the primary school. About 90 percent of the primary schools in Ireland are under the patronage (a remnant of a nineteenth century colonial division) of a Catholic bishop. Early in its term from 2011, the Republic's government was committed to a strategy of offering a greater variety of patrons locally. This was followed up by a series of reports and a pilot polling scheme amongst current parents. As a political process, it failed. The minister driving this within the government was replaced in 2014. However, it might be argued that the institutional Catholic Church has re-entered the public sphere on the basis that primary schools form one of three pillars to Catholic identity in place: the household and the church being the other two. These three pillars compose a parish community. Such an understanding of community, as an associational identity grounded within a particular space, refers to a dynamic social practice. This sense of a parish community is developing outside of the formal political process known as school divestment. It has a theological as well as a geographical meaning in place. Where this community is co-extensive with the definition of a digitised boundary is as yet unclear. When presented with lines on an Open Street Map representation, those charged with verifying the boundary of the parish are often confused by its definition. It is as if seeing the line cut through fields, rivers and townlands is a way of thinking about the parish that had not been part of religious practice. That is to say that the act of definition of the parish boundary may influence a spatial politics whereby the Catholic Church is being asked to divest itself of primary schools. While this political process of divestment lays dormant, the potential of a publicly available map to alter the terms of this process is real.

Changing Boundaries

We propose that the project to digitise Catholic parish boundaries produces a low tide mark in a larger tidal geography. This is because the boundaries have the potential to change faster from this point on than they have in the last century or more because of their cartographic representation. That tide has taken several decades to recede. The validation by dioceses of the boundaries would draw forward a number of contestations about where the boundaries lie. For example, Waterford city's parishes have been changed by the construction of the N25 Bridge, bypassing the centre of the city. The Catholic Church in Ireland is reorganising parishes out of logistical necessity. There are now fewer working priests per head of Catholic population than at any time in the last 150 years. The rapidity of the changing boundaries will make little sense, however, if mapping is only about drawing lines on a piece of paper or a computer screen. Maps are produced for particular reasons, not out of any enduring academic cartographic interest. They are about people's understanding of their own area, in the case of these boundaries, often more oral than cartographic. Having a digital version is helpful in being able to save draft or older iterations as new changes occur. Being able to archive and access these

older versions is also enabled by the digitisation process. While file encodings come and go and formats change, there is now a possibility to make all current and past versions more widely available as time goes on. The boundaries' dynamism and contestation, as was seen in the Waterford example, is undoubted. Their digital rendering in the second decade of the twenty-first century, at a time of significant social and ecclesial change, might be seen as a marking point of this particular tidal geography.

Continuing Boundaries

From the description provided above, it is evident that the underlying structure of the map represents a broad continuity with the past. Because the 'new' parish polygons are based on the re-districting of townlands, there is a continuity with past understandings of how space is apportioned. In this way, there is a relationship between them and the old outlines of territoriality and affiliation. The new boundaries respect the integrity of the townland as the base building block. However, there is some recognition too that the older boundaries can be modified in a process of negotiation. Such a process of negotiation can take place via local knowledge, documented both in text and oral forms. This allows for the accretion of place-based knowledge, jointly or collectively. Some projects with these place-based knowledge at their centre have developed well over recent years. For example, the DCU-based placenames database Logainm.ie (and its crowdsourced accompanying database Meitheal.logainm.ie) continues to develop its own resources. These databases do not rely on a clear sense of rural and urban divisions nor do they rely on defined boundaries to enable people to contribute. The digitised Catholic parish boundary polygon set can augment place-based knowledge, using the townland within its structure. This provides a continuity with past spatial practices and place-knowledge. The continuation across time of such geographies might also be thought of then as tidal. In the next section, we explore this concept of tidal geographies.

Tidal Geographies

As is clear from the Waterford City parish verification process, the boundaries are relatively fluid lines. This fluidity of the parish cartography points to a question: who will be the end user of the digital map? While parishes might need to know where their parish begins and ends by using a map of their boundary, and dioceses may also wish to know this for planning purposes, the digital boundary set is an answer to a question few have asked with any urgency. Their unavailability across Catholic Church structures would indicate that they are not a sought-after resource. Part of the story of Ireland in recent decades has been the waning influence of the institutional Catholic Church in the public life of Ireland. Briefly, this includes the decline in the number of people regularly attending weekly services, an increase in the number of parishes without a full-time priest and increasingly vocal social movements for the repeal of restrictive abortion laws. By many measures, the influence of the Catholic Church in public life in Ireland is in recession. It can be argued then that mapping Catholic parish boundaries in this way

at this time represents a tidal geography. At the point where the institutional power of the Catholic Church to control boundaries is on the wane, the exact location of where parishes begin and end is not needed urgently. The verification of the boundaries with the Church structures is part of this tidal geography.

In a country where Catholic Mass attendance was close to 95% of the population in the 1970s, the tide is undoubtedly going out. This has materially affected the verification of these maps and the boundaries we have devised. Priority is not given to this technical process in many dioceses. While not known for sure, the local knowledge to verify boundaries may also be receding. The validation process in the remaining 25 dioceses remains stuck in its own space. On the one hand, newly derived boundaries like these should be verified with the institution for whom they matter most organisationally. The fundamental spatial unit of the Church in Ireland is the parish. The parish, along with the family unit and the school, provides a stable base upon which the Roman Catholic Church has reproduced itself. On the other hand, the verification of the parish boundaries raises questions about its control over this territory and the resources within dioceses. More than this, the institutional need to view the Church's power in this particular way is not urgent. Many dioceses are struggling to keep up with competing demands of faith development programmes and state-backed safeguarding measures. Confirming which side of the river a red line needs to run is a process without priority amongst bishops.

Boundaries represented on maps are unstable political formations. The division between present day Palestine and Israel remains a vital political contestation as does the meaning of the border between the UK and the Republic of Ireland post-Brexit. Boundaries reflect changing political realities. This project, as much as it is about nodes, polylines and vectors, is a narrative about the recession in the institutional power of the Catholic Church in Ireland. While the graphic and quantitative part of the project took time and effort to produce what seems a relatively stable set of boundaries, the cultural boundaries are less stable. They rely on local knowledge and claims to the validity of that knowledge. While the tidal geography we describe is evident for the Catholic Church, some state actors have a need for the parish boundaries to be available. In addition, as seen above, the Society of St Vincent de Paul has a need for these boundaries to be defined. The Department of Education and Skills in the Republic use parish boundaries to help the creation of primary school catchment areas. (These boundaries are not publicly available.) Through a separate Dublin diocesan project, the Central Statistics Office provides this diocese's boundaries on their website currently. On a practical level for these state actors, the tide is not receding but is at a higher mark than for the usage of the boundaries among diocesan actors. As a tidal geography would suggest, the tide can advance as well as recede.

Conclusion

This paper outlines the process of devising digital Catholic parish boundaries for an institutional church in recession. The Catholic parish boundaries of Ireland represent a form of what we call a tidal geography. The institutional power of the Catholic Church in Ireland has been in near continual recession since the 1980s. This has been charted at institutional and cultural levels and across scales by sociologists, geographers and others for some time (Donnelly 2015; O'Mahony 2010; Inglis, 1998). What is distinctive about the work that we have conducted on digital parish boundaries, however, is a way to describe this institutional decline as a tidal geography. There have been changes to the ways in which these parish boundaries are used. Broadly speaking, the Catholic Church can no longer derive organisational coherence where there is not a defined community of faithful within parishes. At the same time, the verification process within dioceses is not an urgent institutional imperative because knowing which side of a housing estate the red line falls is increasingly unimportant. There are continuities for the boundaries too. Both the Society of St Vincent de Paul and the Central Statistics Office have identified needs for a digital parish boundary set. The bishops and priests of the Church may have no need for the boundaries; one of their anti-poverty organisations certainly does. That being said, devising the digital boundaries relied on the continuity of a much older territorial unit associated with townlands.

The ways in which the digital Catholic parish maps were initially considered and subsequently created was a technical process. It required a significant effort, involving work that many people undertook for a prolonged period of time. Integral to this was an authentication process involving the metadata of the diocesan boundaries in conjunction with the use of the townlands dataset. There was a cartographic generalisation process at work here. It also involved topographical decisions using the vectors derived from other geographies. Beyond the quantitative and cartographic efforts, however, this is a story about how processes of devising boundaries at parish level are mostly contested processes of ground-truthing. They are a set of narrative-based social agreements, negotiated into a place. They consist of tacit knowledges and uses of these knowledges about a place as well as relationships between places. For Catholic parish boundaries to be digitised and then validated, connecting points and lines remain topologies under negotiation. This points to the formal cartographic process as a tool for another purpose. These negotiations are underway with more urgency in some places and with less in others. As we have shown, the institutional Catholic Church has no urgent need for a digital parish boundary dataset. The CSO and other state actors have expressed some interest in such a dataset. The tidal geography of the Catholic Church in Ireland is receding and this is evident in the relative unimportance for the organisation of the digital parish boundary set. A tidal geography, one that tries to describe more than the cartographic or topographical features of a landscape, is one that affirms that time and political contestation are important factors in knowing place. Such a geography is to be understood as contested and negotiated through relational place-making practices.

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