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REFEREED PAPER

# Encountering Place: Mapping and Location-Based Games in Interdisciplinary Education

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*In this paper we propose the use of 'Encountering' a location-based game (LBG) based on the Wberigo platform to facilitate interdisciplinary student learning about places on field courses. Deploying a mobile, digital map-based platform addresses significant challenges – such as the sacrifice of context specificity and methodological applicability and depth. It also runs the danger of 'gamifying' the fieldwork, blinding the participant to their own agency and emergent encounters. Interactive and layered digital map interfaces have affordances that can potentially overcome such challenges. We claim that one such affordance is the ability to play through the map. In other words, maps – and digital maps in particular – offer the possibility of decoupling results-orientated actions from free-form serendipitous engagement with the field. Our argument is two-fold. First, that LBG toolsets such as Wberigo can provide a 'common ground' for students engaging in place-based interdisciplinary research, by providing a material, cartographic basis for playful investigation. Second, that they can facilitate the production of 'spaces of epistemological failure', allowing students to challenge taken-for-granted conceptual and methodological axioms within and across disciplines.*

Keywords: location-based games (LBGs); field education; playful methodologies; mobile mapping; place-based knowledge

## INTRODUCTION

Maps can aid in navigating and becoming familiar with a particular place, and at the same time can raise awareness of the differences between physical terrain, those who inhabit it and the many ways to record experiences in an accessible form. Maps today are certainly more accessible and ubiquitous than before the widespread dissemination of digital and mobile mapping. And while some may claim that the explosion of digital cartography has led an ongoing erosion of critical map reading skills (Hurst and Clough, 2013), a positive side-effect of this in an educational setting is that this also lowers the entry barrier for students, who can be encouraged to deploy more advanced forms of mapping (Cartwright, 2012).

Field research and in situ training are, however, difficult to instil in students, without sacrificing context specificity, broad methodological applicability and/or depth (Marvell *et al.*, 2013). Each place is unique and each culture idiosyncratic, yet those training to do field-based research are expected to develop 'general' skills to hone their comprehension of such sites and approach them with relevant methods. One possible solution is training for contingencies, by weaving randomness and chance into the fabric of situated field courses. Digital maps, through their interactive, slippery and layered user interfaces have affordances that engender certain types of uses (Ellis and Tucker, 2000; Gibson, 1977; Gibson, 1986). We claim that one such affordance is the ability to *play* with the map (The Playful Mapping Collective, 2016), in a form of quick

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experimentation and forgiveness towards mistakes that is rare in other educational settings. In other words, maps – and *digital* maps in particular – can and should be used to educate people about places through play. Within the framework of our methodology, play is understood as a specific mode of engagement with a world through a lusory attitude that decouples actions from teleological consequences. Such an understanding of play, following media philosopher Miguel Sicart, entails ‘being in the world, through objects, toward others’ (Sicart, 2014:39). In this paper we claim that maps present a unique opportunity to act as this kind of focusing objects for play, due to their affordances of mutability and mediation between humans and world.

This claim is explored via a case study of a map-based exploration, through a playful cartographic interface called *Wherigo*. This pedagogic experience was implemented by the authors during an international, interdisciplinary 10-day field course on the island of Gozo,<sup>1</sup> in the Malta archipelago. The customized *Wherigo* platform allowed a group of 34 students, from five universities across four countries<sup>2</sup> and many more nationalities to explore different aspects of Gozo through a range of playful methodologies, encouraging them to encounter their research topics from multiple and creative perspectives. Hailing from various fields and disciplines and required to quickly (re-)adjust to the course’s fluid boundaries, the experience was explicitly designed to mirror the often fuzzy boundaries of contemporary international and interdisciplinary research, further amplified by leaving the conventional setting of the classroom.

The main aim of the paper is to introduce the possibilities of serious location-based games (LBGs) in the area of field-based geography education; define the forms of play required to enable best-practices in such pedagogical track; and exemplify these claims through the field course. The paper begins by situating the *Wherigo* platform in relation to cartography, play and education, as well as other LBGs more specifically. Then we describe details of the educational game built on the platform, that we will refer to as the ‘*Encountering*’ game. We consider the mechanics behind its operation, outlining the importance of ‘zones’, ‘characters’ and ‘tasks’ in the creation of tailored *Wherigo* games. We conceptualize play as a form of autotelic engagement with the fieldwork and document the methods through which playful mobile-based mapping was evaluated, emphasizing the potential of a qualitative evaluation from users with different perspectives, and across different temporal frames.

In the final section we draw out the conceptual value of the exercise, sourced from these evaluations from the authors’ and students’ perspectives. Key themes emerged from this evaluation that could usefully inform other peoples’ research in this area. In particular, we focus on the importance of establishing geographical ‘common ground’ between participants from different disciplinary backgrounds, not in order to merge, fuse or dilute the kinds of knowledges developed in each, but to provide a common starting point for discussion and contestation. Further, it is suggested that LBGs such as *Wherigo*, and the mapping that they enrol, have the potential to facilitate the production of ‘spaces of epistemological failure’ that unsettle previously unchallenged knowledges. This mapping process helps to reveal conceptual and methodological assumptions within and across respective disciplines, enabling students to

contest different ways of knowing, and come face-to-face with their own ‘knowledge gaps’ implicit in all original forms of academic research.

#### RATIONALE FOR ENCOUNTERING: MAPPING, PLAYING AND LEARNING

There were several rationales for introducing *Encountering* into the course curriculum on Gozo. First, by incorporating a LBG into an initial ‘orientation’ and ‘encountering’ activity for the students on the field course we sought to utilize maps’ innate potential to visualize unfamiliar space (MacEachren, 1995). As Adriana de Souza e Silva and Hjorth (2009, p. 603) suggest, ‘public spaces’ have longed been transformed into ‘playful spaces’, with LBGs at the front of a long list of playful, spatial endeavours: from nineteenth-century *flâneurs* through twentieth-century Situationists and twenty-first-century parkour enthusiasts (de Souza e Silva and Hjorth, 2009). The rise of the Situationists’ re-appropriation of public space – and later public media – is further tied to the emergence of mainstream civic artistic practices, the *détournement* and the *derivé* (Lievrouw, 2011). In this way, we wished to build upon the disruptive potential of play-as-political action to challenge moored disciplinary perceptions and offer a potential to viewing the field in the field course rather differently.

Students had little prior knowledge of the island, so it was critical to introduce them to its geography early on, and a directed series of map-based tasks seemed an appropriate way of doing this. One of the overarching goals of the field course sought to reconcile the kinds of knowledge derived from an empiricist ‘top-down’ place-based encounter, with a lived ‘bottom-up’ approach. Maps serve as a prolific platform on which to carry out this pedagogic task, precisely because they frequently stand for factual knowledge of a place, but also because they are also deployed in places in order to navigate or interpret them (November *et al.*, 2010). The cultural meaning of the map is performed, and in turn alters the place that it represents (Crampton, 2002; Ingold, 2000). In other words, maps help to ‘calibrate’ space, by ‘connecting (un)familiar places and people’ (Sutko and de Souza e Silva, 2011, 815). LBGs build on this potential for focusing on particular tasks and encouraging players using maps to make sense of places, through their playful activities.

A second rationale for the ‘*Encountering*’ game lay with the productive and underexplored potential of play as an educational tool for higher education. While often associated with the development of the very young, play in its various forms has become a potent tool for various forms of education and training (Abt, 1970; Michael and Chen, 2005). Play also has a rich history, being conceptualized as a developmental method that allows growth through creative practice and as a way to productively engage with chance or serendipity. The conceptualizations of these two tropes were respectively named by play-theorist Brian Sutton-Smith (1997) as ‘the rhetoric of play as progress’ (pp. 18–34) and ‘the rhetoric of play as power.’ (pp. 74–90). In recent years, research has drawn attention to the specific use of game elements in the design applications for non-entertainment purposes (Deterding, 2015; Deterding *et al.*, 2011).

Specifically, in approaching the notion of play we wished to avoid the potential pitfalls of what has widespread become known as gamification. The myriad (and often conflicting) techniques and design philosophies enrolled in gamification have been incorporated in marketing, business and academic worlds, with varying degrees of success (Deterding, 2015). Gamification is however almost always distinguished by the application of extrinsic – rather than intrinsic – motivation, often in the form of quantifiable outcomes, to non-gameful activities. The resulting structures may end up resembling frequent-flier points and other loyalty programs where points are assigned and participants compete to improve their status in a way that is extraneous to the content of the core activity (flying, shopping). Instead, we adapted Sicart's view on play and playfulness: to us the map represents a potential to become a *toy* to be played *with*, and in doing so opens up the possibility for *playfulness*, a disruptive and autotelic attitude, that is intrinsic in its nature. Such an attitude 'project[s] some of the characteristics of play into nonplay activities. It is an attempt to engage with the world in the mode of being of play but not playing' (Sicart, 2014, 45).

A third and final rationale behind devising this particular interdisciplinary LBG for fieldwork concerned broader issues of pedagogy and knowledge construction. There has been an increasing recognition that the choice of methods impacts on results and insights emerging from research (Law, 2004). The subjective turn in the so-called 'new ethnographies' (Crang and Cook, 2007) has changed the way field researchers position themselves in relation to their subjects/ informers/ partners. Also a widespread incorporation of work done since the 1980s in the field of Science and Technology Studies, and in particular, Actor-Network Theory, across many different disciplines has altered the ways technology and materiality are incorporated into accounts of work done with and for previously 'dormant' things (Law, 2004). A map-based LBG then might serve as a way of assessing the potential of openness in learning about various methodologies, and properly applying these to research sites. It might allow different disciplines to come together, and serve as a task and object, through which knowledge could be seen to be constructed in different ways.

As has been noted previously, the inherent playfulness of the map (Lammes and Perkins, 2016; Perkins 2009) leads to a natural incorporation of cartographic platforms into the context of a 'serious game' for pedagogic purposes. Maps are inherently playful because they invite active exploration; offering open solutions to navigational problems. As Lammes and Perkins, (2016, p. 12) suggest, '[m]apping and play share a long and diverse history', as '[c]entral to both pursuits is the creative and strategic charting of environmental possibilities.'

The idea of utilizing games for more than entertainment, gained much traction in the early 2000s, with proponents citing such reasons as inherent learning, intrinsic motivation and better attention compared to traditional ways of teaching (Lieberman, 2009; Michael and Chen, 2005; Sawyer and Smith, 2008). Cahier *et al.* (2011) for example argue that serious games can be used for engaging people in sustainability as well as educational issues. Nonetheless, serious games are still not universally accepted – for instance, there have been doubts about how much skill is retained outside the game environment, as they are designed with affordances

that may facilitate comprehension without learning (Linderoth, 2010). We recognize such concerns as ultimately linked to the broader division between gamification and playfulness – extrinsic and intrinsic motivations – and attempt to use the map as a focal point for the latter.

So in this paper we aim to assess a way of bringing together the map, the play and the methodological skills that they potentially engender. This does not entail a quantitative analysis of how a map worked, or an explicit usability analysis of the game interface [see (Haklay and Zafiri, 2008) for this kind of approach]. Instead we deploy a critical focus on embedded cultural description and qualitative evaluation of our playful field experience. The mapping assemblage under consideration includes the map, but a much wider network comes together when any map is deployed and we argue that a narrow semiotic or quantitative assessment of the map alone would completely miss the changing and emergent qualities of digital mapping (see Lammes, forthcoming). We use this to highlight some of the implications for others wishing to innovate in this area.

## METHODS

We designed and enacted a 'treasure hunt'-style game for seven student groups, each of which included five members from different disciplinary traditions. Each game had a set of cascading objectives designed to simultaneously educate students about their chosen Gozo-related theme, whilst broadening their understanding of the method(s) that might be used to explore it, and keeping them engaged, playful and motivated. The game encouraged students to move across the whole island so they could have become familiar with various parts of Gozo.

*Encountering* was specifically a LBG. With the increase in smartphone capabilities and the improvement of Global Positioning System (GPS) precision, new opportunities for creating games linked to user location have emerged. LBGs utilize a player's physical location as an 'input', generating location-based information that affects the form and content of the game itself (Jacob and Coelho, 2011), thus enabling the emergence of digital, place-based knowledges within game environments. Serious LBGs can be created and used in educational environments, in ways that promote and engender playful forms of place-based knowledge production.

Nicklas *et al.* (2001) present a taxonomy of LBGs so they can be divided into three main categories:

- Mobile games: that exploit the proximity information of two or more users;
- Location-aware games: that exploit information about the user's localization and his / her distance from some Points Of Interest (POI);
- Spatially-aware games: location-aware games with a massive use of graphics. In this kind of game, developers create a virtual representation of the real world with reproductions of buildings, monuments and landscapes.

Based on this taxonomical division *Encountering* can be defined as a *location-aware game*, built in the Wherigo environment that employs POIs as well as spatial 'zones' to enable players to interact with a wider, geographical

environment. The environment uses smartphone GPS capabilities, but importantly does not depend on Internet access. The authors used the Urwigo builder (2015), an open-source alternative to official Wherigo Builder, created using .NET technology and written in C#. Games within the Wherigo are called ‘cartridges’ and are coded in the Lua programming language.

Creating a cartridge for Wherigo is similar to creating a whole new game. For this exercise, several tools were used to help establish the game board, rules and activities. To start devising a LBG it is necessary to create *zones*, which serve as the building blocks of a Wherigo experience. A zone is a virtual shape in the real world defined by three or more waypoints. Players interact with zones primarily by entering and exiting the shape in the real world. Events in a cartridge occur depending on the player’s location in relation to the zones that the author defines. Zones can be defined by coordinates or just by clicking on the Bing Maps background (Figure 1).

One can also create *characters* – objects that the player can interact with inside of a zone. They are often used to tell a story, guiding the player through a series of events or communicate information. Further, *tasks* are an important tool for guiding the player through a cartridge; a non-intrusive way of telling the player where to go next and what needs to be accomplished at that location. Tasks can also provide motivation by tracking the player’s progress.

Eighty-two different zones were created and distributed around the island of Gozo (Figure 2). Creators can set zones to be visible or invisible, and active or inactive. Visibility defines if players see the zone on the device, or if the zone is hidden for them, a feature that promotes

serendipitous encounters throughout the game environment. Activeness of the zone defines if users can interact with tasks within the zone. All zones were set as active, but only some – topic-specific zones, were visible (usually five or six zones per group). This was done in order to discourage goal-orientated play and encourage exploration and encounter. The digital map in this case acted as antithesis to the much derided ‘SatNav blindness’ that plagues modern driving. By using the procedural capabilities of the game we attempted to create emergent play (Dormans, 2010), without forcing the students to follow certain pre-determined paths. Zones were always broader than the location intended to be visited by students, calculating with GPS accuracy as well as proximity variables.

Each zone had the ability to initiate a function based on player activity – on enter, on exit, on distance, on proximity and on activity changes. Only the *on enter* activities were implemented during the case study (Figure 3) and linked with simple messages and tasks for students related to the location (‘record the sound of the nearest animal’, ‘sketch the landscape from multiple perspectives’ etc.). Each message was accompanied with a sound notification activated upon entry to the zone, in order to attract students’ attention. If entering the invisible zone, the zone became visible immediately. This allowed for ‘chance encounters’ (Sutko and de Souza e Silva, 2011, p. 816) to be generated with unknown phenomena and unfamiliar places.

The Urwigo builder provides ‘drag & drop’ functionality allowing users of varying technical skills to create simple cartridges for education as well as for play. Once the cartridge is prepared in the Urwigo builder it can be exported as \*.gwc or \*.gwz file and opened in any Wherigo player or Wherigo

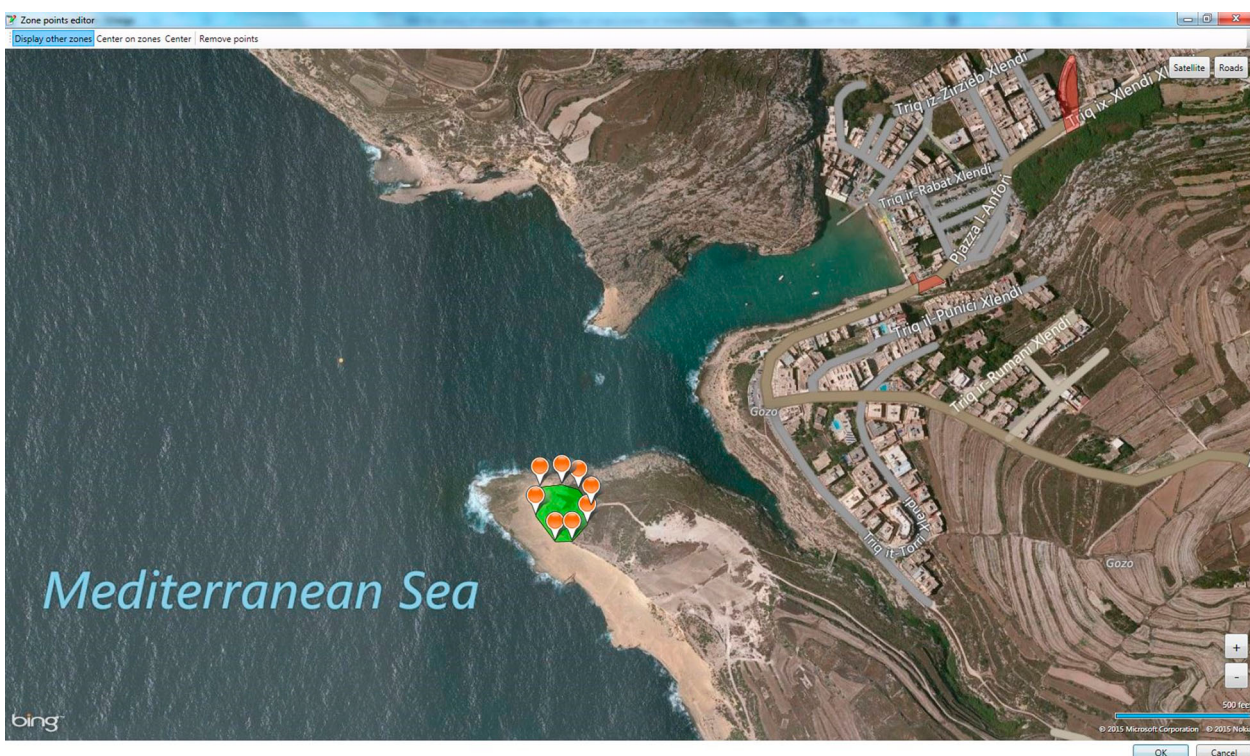


Figure 1. Editing the zone (green) around the Xlendi tower. Other zones (red) are visible in the north-east of the map



Figure 2. Students were able to interact with all of the 82 zones active on the island

enabled GPS device. The main difference is that \*.gwc is compiled in Wherigo cartridge file that can be opened with the Wherigo player, while \*.gwz is zip file containing the Lua code (Figure 4) and all media objects for a cartridge. Figures 3 and 4 show the same event – on entry to the zone called *Xlendi Tower*, and show a message. The figure shows the Urwigo drag and drop environment version and part of the Lua code for the event.

Compared to some other LBGs, such as Geowars, Ingress or Pokémon Go, Wherigo is designed as a

customizable environment. Two crucial distinguishing traits characterize our use of Wherigo and the game design that emerged: modality and rapid deployment. Modality is achieved by building on an open-source platform, which allows for different levels of contributions from team members. Once the initial concept had been outlined, the authors were able to work on several cartridges at the same time, rapidly prototyping them and making changes ‘on the move’. Hailing from three different countries and deploying the game in a fourth presented some difficulty in coordination for the team, meaning that most progress was achieved only during face-to-face work sessions, a few days before the event. The low entry barrier and varying technical skill level required for making the game meant that testing and interaction could happen in a matter of hours. The easy distribution method – loading the cartridge via email to the students’ own mobile phones (through iOS or Android apps) meant that changes could be enacted immediately and lessons from testing and sessions taken into an account.

Once it had been established students played the game over a three-hour period. They were free to decide how to move across the island and where to go, deploying Bing map tiles on their smartphone, to navigate between target zones in the game, but also encountering invisible zones en route. As such users of the *Encountering* game could only discover sites via the map. They recorded actions with digital camera and video, and were also encouraged to record field observations in notebooks and to reflect on the significance of the game activities, focusing in particular on the methodological differences that emerged. Time was earmarked after the game play to discuss impressions, outcomes and implications of the game. In addition focus group discussions were held with a sample of students, in order to give them



Figure 3. Creating an *on enter* action, which will tell player what to do at location Xlendi Tower

```

|
_Q7IKS = wherigo.Zone(_AFbm)
_Q7IKS.Id = "72f77503-fd13-43ff-949b-8adecf655fd6"
_Q7IKS.Name = _7H11("\021\007\123\029\069\111\093\020")
_Q7IKS.Description = ""
_Q7IKS.Visible = false
_Q7IKS.Commands = {}
_Q7IKS.DistanceRange = Distance(-1, "feet")
_Q7IKS.ShowObjects = "OnEnter"
_Q7IKS.ProximityRange = Distance(60, "meters")
_Q7IKS.AllowSetPositionTo = false
_Q7IKS.Active = true
_Q7IKS.Points = {
    ZonePoint(36.061643063541, 14.2146795110035, 0),
    ZonePoint(36.0614940763548, 14.2147778350143, 0),
    ZonePoint(36.0612961146027, 14.2150432803495, 0),
    ZonePoint(36.0611543069867, 14.2154174297561, 0),
    ZonePoint(36.0610941670919, 14.216073580041, 0),
    ZonePoint(36.061645659491, 14.2163420316722, 0),
    ZonePoint(36.0617940983295, 14.2159329474791, 0),
    ZonePoint(36.0620833744164, 14.2156208313531, 0),
    ZonePoint(36.0620045200493, 14.2152071747046, 0),
    ZonePoint(36.0619022318396, 14.2149454724791, 0),
    ZonePoint(36.061765147667, 14.2148155826265, 0)
}
_Q7IKS.OriginalPoint = ZonePoint(36.0616251600336, 14.2153505160435, 0)
_Q7IKS.DistanceRangeUOM = "Feet"
_Q7IKS.ProximityRangeUOM = "Meters"
_Q7IKS.OutOfRangeName = ""
_Q7IKS.InRangeName = ""

```

Figure 4. Example of Lua code for specific zone

a wider opportunity to critique and evaluate the exercise and to juxtapose staff impressions to student experiences.

#### ESTABLISHING COMMON GROUND

The technical challenges discussed above were significant, but establishing a common ground between different disciplines, methodological experiences and between staff and students was also crucial. The establishment of places as common spaces of identity and knowledge-formation has been identified as the cornerstone of much geographical work on field course design (Coe and Smyth, 2010; Fuller *et al.*, 2006; Jones, 2006; Lorimer, 2003). This aspect is even more significant in our case study of the Gozo field course, where students from a range of disciplinary, methodological and empirical backgrounds worked in mixed groups on a range of themes. The initial part of the course therefore required the establishment of a 'common ground' on which all students could find a place.

Maps themselves are critical for the establishment of such a common ground. They 'provide the very conditions of possibility for the worlds we inhabit and the subjects we become' (Pickles, 2004, p. 5), exercising a selective yet also productive power to visualize, or to eradicate the presence of things in the world. The intention of the *Encountering* game was not only to utilize, but to playfully exploit the power of the map. Students would engage in their own mapping through embodied, mobile and performed encounters with different thematic sites in the game, creating unique maps in the process. In turn, the serendipitous elements of the game introduced productive notions of surprise and incompleteness.

One of the recurring inspirations for the game, and its wider field course context, was the work of the Situationists.

Their early psychogeographic maps of Paris and Amsterdam were powerful attempts to utilize map production, and especially cartographic collaging, as methods to stimulate new expressions of space and place. In combination with urban walks, these cartographic efforts were designed to foster a new kind of interaction with, and awareness of, the environment; through the generation of 'ambiances'. As Bonnett (2006, p. 34) suggests, Situationism was torn between 'the desire for endless disorientation' and 'warm memories of the solidarities of working-class life.' The *Encountering* game, was therefore markedly different from a Situationist *dérive*. It was designed neither as a disorientating activity, nor as a conscious desire to re-animate a pre-modern sense of place. Instead, the *Encountering* game was designed to encourage, support and foster new, novel, 'creative' (Hawkins, 2015), shared experiences of place – or interdisciplinary 'common ground'.

Traditional approaches to interdisciplinarity have frequently started from concepts, and then sought common ground (see Repko and Szostack, 2016). When this works well it can foster shared communication. However, it also frequently means finding oneself at a lowest common denominator, reducing the complexities and nuances of individual approaches to generalizations and little-contested platitudes. Student feedback from previous iterations of the field course suggests that for most students, disciplinary identity emerges from shared ways of doing, from methodological assumptions, from pedagogic and curricular structures, and not from the empirical sites of their research. Conceptual differences matter. However, recent research has suggested that alternative ways of fostering disciplinary encounter might exist, grounded in empirics and real world research with a focus on taken-for-granted everyday practice, things and spaces [see (Devine-Wright, 2015; Lorimer and Spedding, 2002)]. An important aim of the game was to explore how

the field and the map might be deployed to encourage a productive encounter.

We did not wish to stimulate authoritative accounts of either place or knowledge. Whilst the efforts of the Situationists were directed towards the spatial, social and circulatory effects of capitalism, the *Encountering* game was designed as a ‘jumping off point’ for students, who might otherwise feel alienated and disorientated by their first interdisciplinary engagements. In effect, we were designing a kind of ‘alter-Situationist’ game, in which disorientation could be alleviated but also addressed, explored and challenged.

Because of the multi-dimensional mix of the field course groups, we wanted to avoid reductive and conceptual approaches to bringing ideas together. Instead, we deployed *Encountering* from the other end: starting with shared *empirical*, and *placed* sites. What would bring students together in their thematic groups was thus not a common *disciplinary* ground, but a common, actively and purposely cultivated, *actual* ground. For this reason, the map for each of the teams showed five to six thematically relevant zones chosen by the designers as their main locations. The instructions challenged them to attempt to visit all and carry out their corresponding tasks. This left 76 invisible zones for each team,

revealed only upon chance and leaving groups the option of whether to follow their instructions. This positioned the map as a catalyst for a playful attitude: something to be uncovered and experimented with. Rather than the calculative certainty of the GPS, the screen was intended to invoke the romantic uncertainty of something more akin to pirate treasure maps. Students were encouraged by the map to plan a route between their visible zones, and during these journeys the map reminded them when they by chance encountered one of the other programmed but hidden examples. Successful completion of tasks needed to be recorded by interacting with the map interface.

Visiting all six main locations was an ambitious endeavour for most groups. Participants had to negotiate between completing the game by visiting each of their visible zones, and the practicalities of agreeing on how to enact commands at specific sites. Each group had a different rhythm. Their chosen routes and destinations were frequently interrupted when they walked into an invisible zone, which suggested new directions and tasks. As more of the pre-set sites were either chanced upon or navigated to, they were added to the map (Figure 5). Once encountered, all these zones visibly lingered on the map.



Figure 5. Examples from the Wherigo app environment. Wherigo™ v341 is a cartridge player by Groundspeak, Inc. © 1992 – 2017 TomTom. © Mapping Unit, Malta Environment and Planning Authority.



This feature became central to the game serving as an inscriptive, reward mechanism, but had in fact only been added at a late stage. It was suggested after an on-site play test. Each group therefore produced a unique map that hinted towards, their theme. Completion of all tasks was neither possible nor really desirable. After the day was completed each group could upload their map and subsequently deploy it to recall their tracks through the Gozitan landscape, with the map acting as a shared record that prompted memories and reflections about the events that were mapped out. As a tool for discussion, for making connections and exploring differences the map remained ambivalent and provisional. The ambiguous map stories that were made and recounted during and after field practice illustrate the emerging process in which a common ground was built during the mobile, playful encounter and highlight the emergent and playful qualities of mapping (Kitchin and Dodge, 2007; Perkins, 2009).

With each map emerging, a key question concerns the notion of authorship and ownership. As authors of the game, we assumed the not wholly unjustified caricature of the mapmaker as an 'extraordinarily selective creator ... of a world' (Wood and Fels, 2010, p. 51). We made decisions on what to depict: the visible target sites for each team, as well as the invisible zones that could be revealed through chance encounters. We imprinted a sketch of the common ground into the game engine, one that would serve as the students' initial orientation device around the island. This game was deliberately conceived as a 'top-down' activity, with designers dictating all the aims, rules and mechanisms to students. It was grounded in a wider logic of the field course, in which the students would start from closed and directed activities and move towards more open, creative and self-guided systems of play as the course progressed.

Yet as world-makers and designers of the game board we also projected our own views onto the game, anticipating reactions and engagements that in practice took very different forms. In our desire to facilitate interdisciplinary encounters on the same physical ground, the players were conceived as complete groups, not as individuals. The emergent map showing the different sites for each team presupposed the group staying together and using one device throughout the game play. In reality, groups took independent decisions that sent them on different paths. When one group decided to split up because of different walking abilities, they suddenly found themselves outside of the game. The map in the game was deployed to help them subvert the rules in a playful way. The negotiation that occurred between group members and the playful suggestion of turning the split into a race between bus and walkers was clearly outside of the static 'designer-led' framework. The game here both worked for and against a shared common ground. It seemingly excluded some group members from the task at hand, but their common decision to break the rules created new shared spaces. This break-up had consequences for the map, as did the enrolment of up to four different devices in some teams. The map that we made for each team did not reflect these divergent trajectories. While this provided great potential for distributed leadership, it also meant a fragmentation of the map, de-coupling it as a device for shared memories of the encounters, and separating it from some group members' experiences.

In many ways, the digital, mobile map provided the biggest hurdle to the generation of this shared sense of encounter. Unlike a paper map – unfoldable, sharable and often unwieldy without assistance – the map interface aboard a digital, mobile device is small, un-useable in direct sunlight and dependent upon other technical (battery, data), and environmental (dry, out of direct sunlight) factors. Although other forms of map (paper, waterproof, cloth or, in-situ and showing that you are here) are not without their own problems, digital, mobile map use renders collective engagement difficult. The emergent game-play native to digital devices, while opening additional serendipitous possibilities, allowed for additional technical errors.

Another interesting observation concerned the role of local, student knowledge. Four of the seven groups included a Maltese or, in one case, a Gozitan student who ostensibly 'knew' (culturally, historically, geographically) more of the island. This was the source of much discussion during the design stage, with its potential effect on a 'level-playing field' for all students. There are two points to be made on this. One of these confirmed our initial worries that some students had an unfair navigational knowledge, whilst the other offered a very different interpretation.

First, most Maltese/Gozitan students became *de facto* tour guides, with some actually leading their group to locations, whilst others imparted local knowledge of the surroundings.<sup>4</sup> This restricted the possibility for knowledge to be shared, circulated, debated and contested between students of different disciplines in each group, resulting in a kind of authoritative 'travel story' (de Certeau, 1984, p. 120). As such, they inadvertently aped the traditional role of the field course leader (Coe and Smyth, 2010). In other words, a particular common narrative was imposed with the possibility of alternative place-based knowledges unnecessarily shut down.

However and second, the rhythm of the game, as well as the diverse and creative nature of the tasks (cf. Table 1), rendered navigational knowledge just one small part of the equation. Whilst the *Encountering* game was designed to give students a sense of the geography of the island, it also invited participants to engage differently with space. Each task instructed the group to perform a particular activity ('follow X', 'ask Y', 'discuss Z') and record it ('photo X', 'video Y', 'sketch Z'). The skill of completing each task lay its creative interpretation, and playful execution.

To conclude, the map-component of the LBG proved an effective tool for creating common, interdisciplinary ground. By tracking the sites and the tasks for each group it allowed a shared performed experience for the students coming from various backgrounds. The tasks were literally mapped out- and it was through the map interface that decisions about actions were taken. Yet, the unexpected possibility of running several instances of the game on different group members' devices created unexpected complications that we, as the designers, did not anticipate.

#### SPACES OF EPISTEMOLOGICAL FAILURE

One important reason for trying to create this common ground was to generate 'spaces of epistemological failure'. That is, spaces in which the students' lack of extra-disciplinary

Table 1. Examples of locations, themes, tasks and enacted outcomes

Location and research theme	Tasks	Student outcome
Marsalforn Salt Pans: National identity	Start a conversation with someone selling 'authentic Gozo salt'.	Encounter with a local salt entrepreneur. Heated debate around authenticity in tourist-oriented local produce
Lunzjata Valley: National identity	Contemplate the most beautiful valley in Gozo. Discuss what makes beauty	Students failed to appreciate the link to their research theme, but reflected on this failure during critical reflection
Calypso Cave: Myths and legends	Deconstruct the site that is arguably most central to Gozitan tourist advertizing	The mismatch between the imagined mythic qualities of the site and its disappointing unkempt reality dominated outcomes
Ta Mena Estate: Drinking practices	Wine production is all about 'terroir' – that is, the land and the soil that makes the grape. Bring some back with you and be prepared to explain why it's so important!	Students participated in guided visit and encouraged a wider group to return to share and expand on their personal and at first time-limited experience
Old prison: Surveillance	Take a look around. How do you think surveillance was carried out here? Sketch out what you think would be the most functional prison layout.	Students used their visit to shift their research theme towards a more nuanced and performative view of surveillance
Frenc Shrine: Myths and legends	Retell the story of Frenc of Gharb!	Students enacted a 'tableau vivant' in front of the statue and captured a photographic image of their retelling, freezing the moment in an iconic image
Ġordan Lighthouse: Surveillance	Start a discussion on the changing nature of navigation, communication and observation.	Students got lost on the way to the lighthouse, requiring to be 'rescued' by staff. Lead to a discussion of navigational practices in the antiquity and today. Blame was passed around and wayfinding as a collective practice was contested

knowledge could be laid bare through playful risk-taking (Lammes, *forthcoming*). This exposure is a necessary step, it is argued, in preparing students for innovative and creative research. Indeed, it would allow them to get to grips with the research process, coming face-to-face with gaps in their own – and perhaps previously secure and unchallenged – disciplinary knowledges.

Therefore, the second step in this process of common grounding was a deliberate attempt to de-stabilize the territory we had provided for the students. Tasks designed by groups for others to carry out would encourage them to engage in a different playful method. These ranged from visual/textual deconstruction of literature, images, signs and the surrounding landscape, to orthodox research methodologies such as quantifying an issue through a survey, or interviewing a research subject, as well as more creative tasks such as devising a simple semaphore alphabet, whilst on the highest hill on the island, or recreating a healing scene depicted in a village memorial. These were attempts to instruct students to pay attention to specific sites *together* in ways that would provoke inter- as well as *intra*-disciplinary discussion about meaning, interpretation and understanding. As Marvell *et al.* (2013, p. 557) suggest, this places students at the 'centre of the transfer of knowledge' between and within disciplines. Yet, such attempts were not always successful, as can be seen from the examples in Table 1.

Each of the tasks was designed to generate a productive tension between particular ways of knowing. Although each site was ostensibly fixed (at least in a geo-coordinated sense) as shared between group members, their access to it was through individual and different disciplinary knowledge, amongst which were a different capacity to read the map. However, due to the collaborative nature of the field

course, in which students had to participate, design and present as interdisciplinary collectives, these disciplinary knowledges could not be imposed onto empirical sites without some kind of scrutiny by other group members. In order to present their findings from each activity, students would have to approach problems collectively, dealing with all the issues that are part-and-parcel of field course group work (Marvell *et al.*, 2013).

Thus, students were provoked into having discussions on the various terms within each task and forced to understand their own positionality in the disciplinary matrix. They had to argue about routes between sites. Media studies students had very limited experience of ethnographic exploration and tended to rely upon textual analysis during the tasks and were less map literate than the geographers. Game design students also found fieldwork challenging. Human geographers were happier with the case-based empirical encounters and ethnographies that informed much of their disciplinary practice, but sometimes uneasy with conceptual abstraction. Students with a scientific training, either in GIS or physical geography, found the theoretical debate about knowledge claims troubling, and frequently retreated into performing technical tasks and navigational activities in the groups. Thus, students were provoked by the map and the tasks embedded in the map, into explaining their own understanding, in relation to the provisional (although increasingly shaky!) common ground. Encountering new zones introduced new areas for debate.

This negotiation of positions and approaches was frequently based on a set of failures, ignorance and disconnection. This is highlighted in the example of the Lunzjata Valley. Considered one of the most beautiful place in Gozo, students were asked in the task associated with this zone to contemplate 'what

makes beauty?’ However, despite its abstractive potential, the task failed to produce any meaningful discussion or reflection. Without direct guidance, and after a long day in the field, students failed to make what we assumed would be an obvious link. Diverse disciplinary backgrounds sparked no debate in the field and was only discussed during feedback. The sequence of tasks and the timing of their execution led to an unexpected outcome. This was particularly the case for the students from a more quantitative methodological background unused to such open instructions.

So the *Encountering* game acted as a starting point, mapping out fields of dissonance and absence, as much as giving a first common orientation of the island. In the immediate aftermath of the game, students commented primarily on the place-based experiences the game had facilitated: an exploratory getting to know the island that marked a sharp contrast to more familiar forms of learning, an exercise in multiple forms of navigation and orientation, and a strong experience of the practicalities of getting about Gozo. The individual tracks across the island set against the digital map background served as a record of this exploration. They perceived the tasks primarily as useful motivational markers for keeping going, thus prioritizing the common grounding of shared places and movements over methodological or conceptual negotiations. In many cases, they failed to understand the absences revealed during the game as something positively productive. Where the groups struggled to see connections between the tasks and their topics, they tended to dismiss tasks as simply not relevant, or as poorly worded instructions.

This reveals the fine line between productive failure and unproductive rejection in educational LBGs. Without further guidance, these spaces of failure can become too difficult, or not enticing enough, to navigate. *Wherigo* provided an architecture and the game design provided a context for learning, but the *use* of such mobile map-based serious games needs to be part of a broader innovation. Mapping in this context only works, if it is situated in other pedagogic and curricular structures. Instead of facilitating a playful attitude, the digital map runs the risk of becoming a coercive interface that nullifies players’ agencies and acts to flatten and simplify the complex realities of the field. Following a marker to unveil an activity may result in non-reflexive engagement with the markers, rather than an internalized exploration with the activity itself. As a performative, embodied experience, such activities, whether individual or group-based, still require a strong and precise pedagogical framing. This includes building or questioning relations to previously learnt approaches (‘unlearning’, cf. McWilliam, 2008), as well as encouraging reflective memory or re-play.

As designers, at times we were disappointed that students ‘didn’t get’ certain connections or abstractions, but we still retained control of the map and game within *our* designed framework. We were not able to iterate quickly enough within the course’s time-demanding structure, to change the rules and make things more productive for the groups that ‘failed’ (Table 1). Possible solutions such as giving students a higher degree of autonomy during the selection and performance of the task, or better-structured debriefing sessions arose only after the fact. As such, our expectations went beyond what the LBG could deliver outright.

However, this failure to always produce anticipated outcomes reflects a largely rich student appreciation of the value of the wider 10-day field programme. The *Encountering* game was embedded in a programme of playful research activities. Student evaluations of the course highlighted the (un)learning journey they faced and the ways in which opinions of map-related activities changes. Stages of frustration, confusion and rejection alternate with moments of insight and exchange, coming together in higher-level learning only after reflection. Importantly, the LBG and its map interface produced reactions amongst the students. They could not remain indifferent and thus had to take a position within their own learning. The mediating quality of the map, and the placing of tasks that the game design facilitated across the map, were seen by most students as crucial introductions to the field, to disciplinary difference, and to the potential of playful methodological exploration. The experience also significantly impacted their further engagement with sites and topics on the island, highlighting the strength of this game-based approach and the centrality of mapping in this process.

## CONCLUSION

LBG toolsets such as *Wherigo* provide a flexible, platform for the development and interrogation of place-based knowledges. *Wherigo* with its alternative builder *Urwigo* certainly provides a useful free & open-source tool for creating and deploying serious LBGs. The possibility of creating the game logic and task structures via a drag&drop interface helps non-technical users to produce simple, yet stable and well performing mobile activity. The LBG can thus be quickly deployed to reveal important aspects of research, and focus critical attention on contested field-based knowledge.

Interdisciplinary work, both in academic and student spheres, is often mired in a lack of consensus over terminology, conceptual value, methodological applicability and practical facilitation. A ‘playful mapping’ (Lammes and Perkins, 2016; Perkins, 2009; The Playful Mapping Collective, 2016) exercise such as the one detailed in this paper, in the context of an interdisciplinary field course, is an innovative place-based approach to engaging with some of these long-standing concerns. The *Encountering* game we discuss here highlights an alternative mode of what we call common grounding. Instead of starting from conceptual or methodological overlaps, the map-based game fosters a shared engagement with place amongst a mixed student group to disclose existing disciplinary differences in approach and method. Employing the ambiguities of the map, it is designed to question disciplinary and pedagogic boundaries. The game uses the map as a form of a toy, allowing for the adoption of playful attitudes towards the words it aims to represent. It seeks to empower students to productively debate, contest and challenge conceptual and methodological axioms prevalent within and across these disciplinary divides.

The gaps and absences that trigger research and new understanding, which we hoped to facilitate sometimes failed to materialize within the game. While opening up dissonances, students did not always find adequate tools to productively navigate those within the game. To build new

knowledge from these map-based and playful situations of disciplinary openness requires a broader pedagogic framework. The *Encountering* game succeeded in providing a first engagement with place and interdisciplinarity, but needs to be seen as a starting point for further exploration of playful field-based learning. Mapping in this context needs to be seen as situated – and, the curricular structure that preceded and came after the game were crucial in altering what the map-based interface was able to achieve.

A successful implementation of such pedagogical innovation thus is very much more than a technical task, and depends upon a complex assemblage of things coming together in particular places, enacted by people with different motivations, skills and backgrounds. Playful mapping is about much more than the map alone!

#### GEOLOCATION INFORMATION

Gozo, Malta, 36.043495 N, 14.240753 E (36°02'36.6"N, 14°14'26.7"E)

#### BIOGRAPHICAL NOTES



Jiří Pánek holds a BSc and MSc in Geography and GIS from the Department of Geoinformatics and PhD from the Department of Development Studies, both Palacky University in Olomouc, Czech Republic. His research is focused on GIS in development cooperation and humanitarian aid, with main focus on Participatory

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#### Notes

- 1 This Erasmus+ course is led by Chris Perkins, one of the authors of this article.

- 2 Including Geography, Media Studies, Development Studies/Geographical Information Science (GIS), Interdisciplinary Studies and Game Studies students from the Universities of Manchester (UK), Utrecht (NL), Olomouc (CZ), Warwick (UK) and Malta. The *Wherigo* game was part of a suite of three game-days centered around mapping, the others focusing upon experiencing the island through smell mapping, and enacting spatial stories about Gozo in a *dérive*.
- 3 *Wherigo* itself is a platform for creating and playing GPS-enabled adventures in the real world, using GPS technology to guide users to physical locations and interact with virtual objects and characters (Groundspeak, 2015).
- 4 A process further evidenced by the comments of one student who noted in a formative evaluation that a fellow Maltese group member had acted as a 'gatekeeper' during the game controlling 'access' to knowledge of the island.

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