CONTEXT-BASED MODELLING OF SPECIALIZED KNOWLEDGE[1]

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Abstract: *EcoLexicon is a terminological knowledge base (TKB) on the environment where different types of information converge in a multimodal interface: semantic networks, definitions, contexts and images. It seeks to meet both cognitive and communicative needs of different users, such as translators, technical writers or even environmental experts. According to Meyer et al. [1992], TKBs should reflect conceptual structures in a similar way to how concepts relate in the human mind. From a neurological perspective, Barsalou [2009: 1283] states that a concept produces a wide variety of situated conceptualizations in specific contexts, which clearly determines the type and number of concepts to be related to. The organization of semantic information in the brain should thus underlie any theoretical assumption concerning the retrieval and acquisition of specialized knowledge concepts as well as the design of specialized knowledge resources [Faber, 2010]. Furthermore, since categorization itself is a dynamic context-dependent process, the representation and acquisition of specialized knowledge should certainly focus on contextual variation. Context includes external factors (situational and cultural) as well as internal cognitive factors, all of which can influence one another [House, 2006: 342]. This view goes hand in hand with the perception of language as a kind of action, where the meaning of linguistic forms is understood as a function of their use [Reimerink et al., 2010]. In this paper we briefly describe each module of our resource and explain how EcoLexicon has been contextualized according to conceptual and terminological information. The conceptual contextualization of different entries in EcoLexicon has been performed according to role-based domains and contextual domains, whereas terminological contextualization is based on contextual domains and use situations. In this way, context is two-fold, since we account for the referential context of concepts in the real world and users' own communicative and cognitive context.*

Keywords: *context, dynamism, reconceptualization, environmental knowledge, TKB.*

ACM Classification Keywords: *H.5.2 User interfaces – Natural language*

1. Introduction

EcoLexicon[2] is a terminological knowledge base (TKB) on the environment where different types of information converge in a multimodal interface: semantic networks, definitions, contexts and images. It seeks to meet both

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[2] http://ecolexicon.ugr.es/

cognitive and communicative needs of different users, such as translators, technical writers or even environmental experts. So far it has 3,146 concepts and 14,058 terms in Spanish, English and German, which converge in a multimodal interface with different types of information. Currently, four new languages are being added: Modern Greek, Russian, Dutch and French.

According to Meyer et al. [1992], TKBs should reflect conceptual structures in a similar way to how concepts relate in the human mind. From a neurological perspective, Barsalou [2009: 1283] states that a concept produces a wide variety of situated conceptualizations in specific contexts, which clearly determines the type and number of concepts to be related to. The organization of semantic information in the brain should thus underlie any theoretical assumption concerning the retrieval and acquisition of specialized knowledge concepts as well as the design of specialized knowledge resources [Faber, 2010].

Furthermore, since categorization itself is a dynamic context-dependent process, the representation and acquisition of specialized knowledge should certainly focus on contextual variation. Context includes external factors (situational and cultural) as well as internal cognitive factors, all of which can influence one another [House, 2006: 342]. This view goes hand in hand with the perception of language as a kind of action, where the meaning of linguistic forms is understood as a function of their use [Reimerink et al., 2010]. In other words, a given utterance does not have a meaning, but rather a meaning potential that will always be exploited in different ways dependent upon the discourse context [Evans, in press].

The notion of context has been widely discussed in the linguistic community [Austin, 1962; Gadamer, 1995; Grice, 1975; Sperber and Wilson, 1986, 1995], but all of the approaches seem to coincide in defining context as a dynamic construct. However, term bases are often restricted to generic-specific and part-whole relations, whereas conceptual dynamism can only be fully reflected through non-hierarchical ones. These are mostly related to the notions of movement, action and change, which are directly linked to human experience and perceptually salient conceptual features.

In the following sections we first explain how EcoLexicon has been designed and structured. Then we show how it has been contextualized according to conceptual and terminological information. The conceptual contextualization of different entries in EcoLexicon has been performed according to role-based domains and contextual domains, whereas terminological contextualization is based on contextual domains and use situations. In this way, context is two-fold, since we account for the referential context of concepts in the real world and users' own communicative and cognitive context (what users need and what they already know). First of all, in section 2, we briefly describe each module of our resource.

2. EcoLexicon: an environmental TKB

In EcoLexicon, all knowledge extracted from our specialized domain corpus has been organized at a macrostuctural level. This has resulted in a frame-like structure or prototypical domain event, namely, the Environmental Event (EE) [see Figure 1; Faber 2007, León Araúz *et al.* 2009, Reimerink and Faber 2009].

The EE provides a template applicable to all levels of information structuring from a process-oriented perspective. These macro-categories (AGENT → PROCESS → PATIENT/RESULT) are the semantic roles inherent to this specialized domain, and the EE provides a model to represent their interrelationships at different levels.

From a more fine-grained view, concepts appear in both dynamic networks and definitional statements linking them to all related concepts by means of a closed inventory of semantic relations especially conceived for the environmental domain. Figure 2 shows the network of GROYNE, associated to other concepts in a two-level hierarchy through both vertical (*type_of*, *part_of*, etc.) and horizontal relations (*has_function, located_at*, etc.).

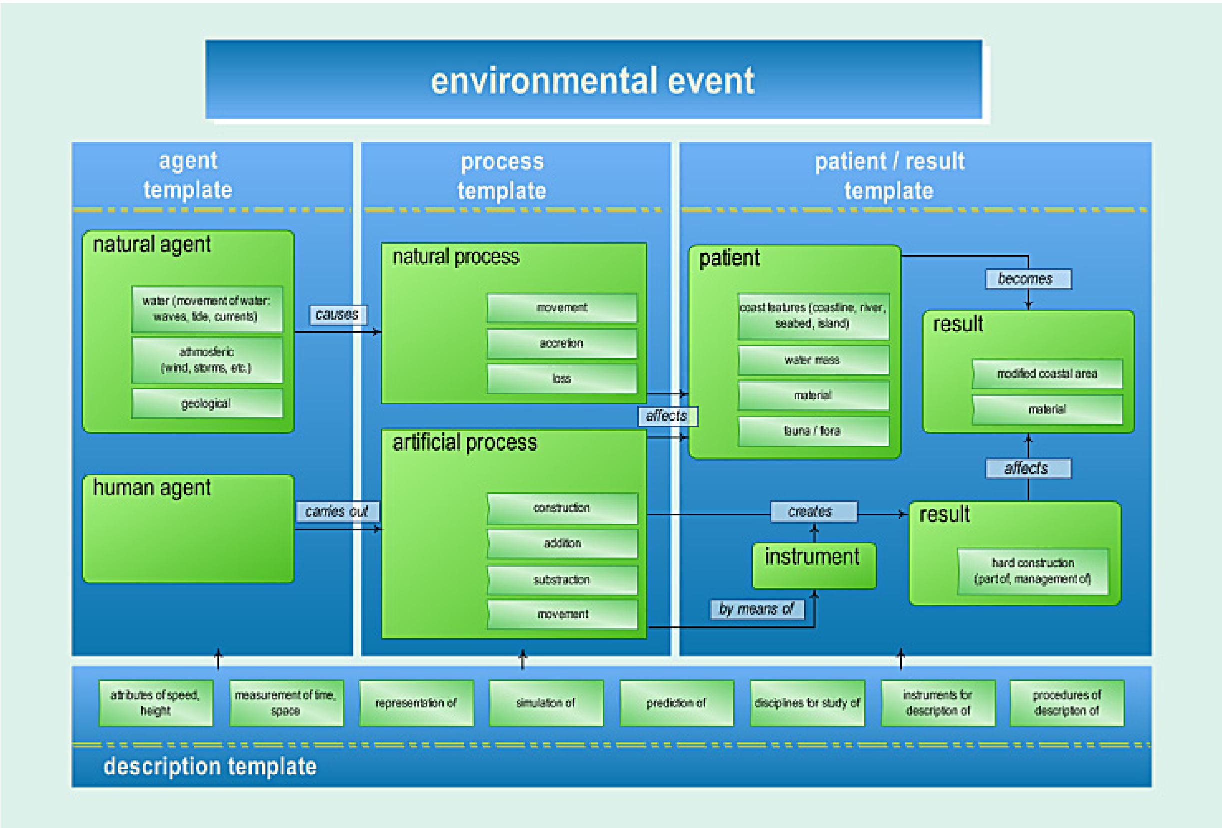


Figure 1. The Environmental Event

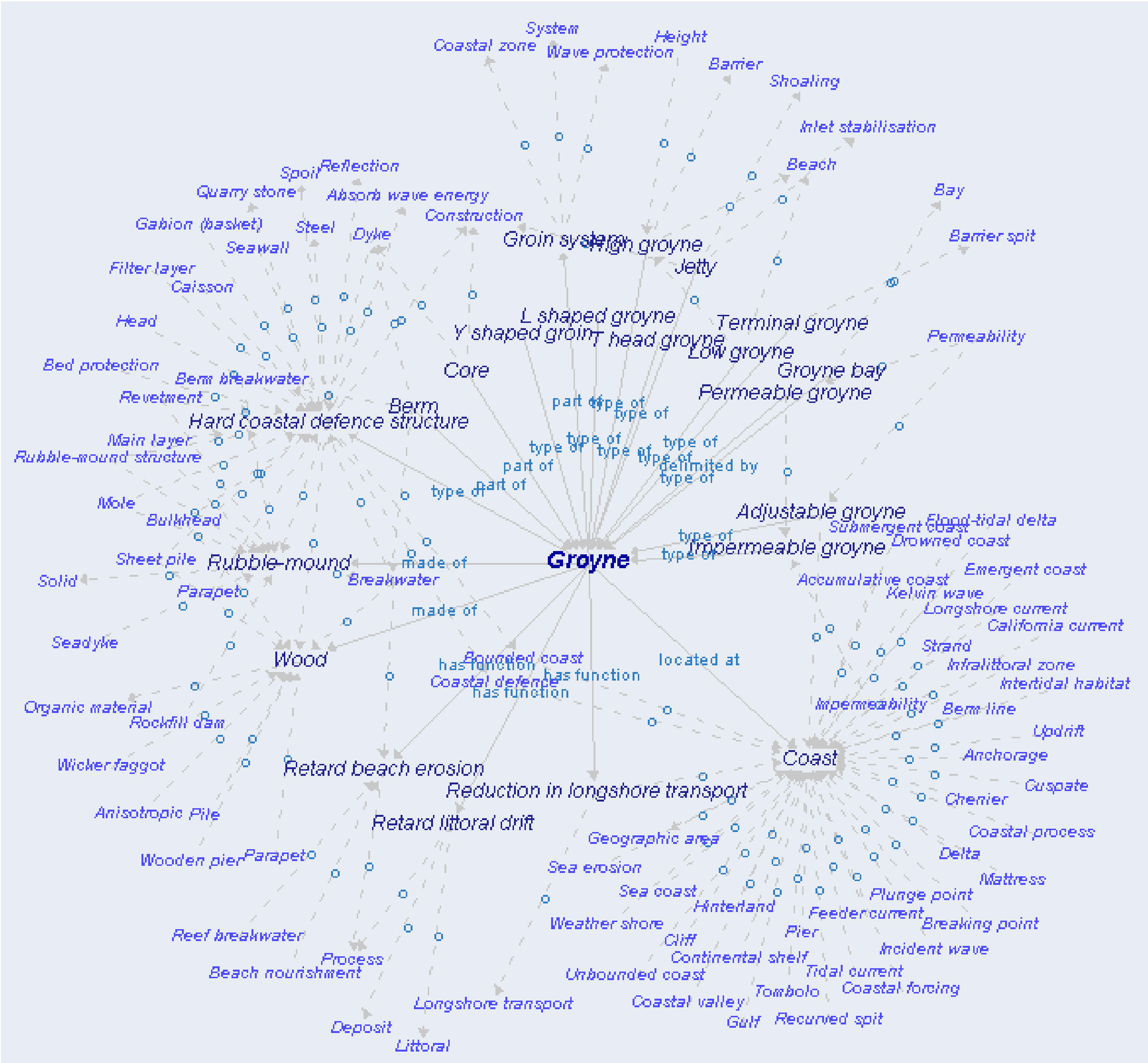


Figure 2. Conceptual network of GROYNE

In EcoLexicon definitions follow a category template [Faber et al., 2007] that constrains the definitional elements to be included (Figure 3). For example, the definitional statement of GROYNE is based on the number and type of conceptual relations defined for the category template HARD COASTAL DEFENCE STRUCTURE.

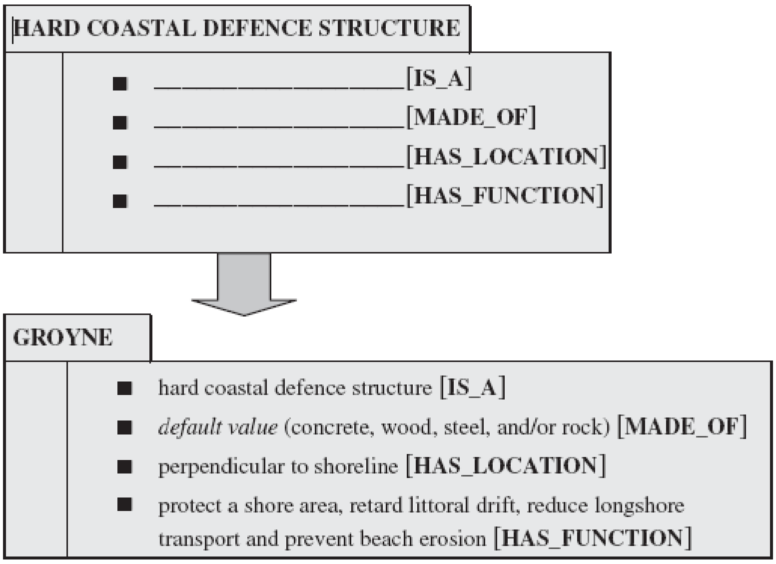


Figure 3. Activation of the HARD COASTAL DEFENCE template in the definition of GROYNE

All coordinate concepts of GROYNE make use of the same template. As functional entities, all HARD COASTAL DEFENCE STRUCTURES need the following information for an overall description: (1) the *is_a* relation marking category membership; (2) the material they are *made_of*, completed with the values of the construction material class; (3) their location, since a groyne is not a groyne if it is not *located_at* the sea; and (4) especially the purpose for which they are built.

Images are also an important part of EcoLexicon, which are chosen according to definitional structure. For example, in Table 1, five meaningful images are associated with the definition of GROYNE. *Is_a* and *made_of* relations are illustrated by a concrete iconic image, whereas *has_location* and *has_function* are described through more abstract and dynamic images.

Definitions are also complemented with other linguistic resources such as Textual Contexts (TCs) and concordances, which help users achieve a different level of understanding of the specialized domain. In Table 2, for example, GROYNE is not only defined as a coastal defence structure. Other relevant information is included as well: they are cost-effective and many coastal communities prefer other solutions.

Three types of concordances are included in each entry of EcoLexicon: conceptual, phraseological and verbal. These concordances allow the users to widen their knowledge from different perspectives. Conceptual concordances show the activation of conceptual relations in the real use of terms, which makes definitional templates empirical structures and adds new knowledge about the values of each sentence argument. Phraseological concordances help the user in acquiring specialized discourse. Thirdly, verbal concordances highlight the most frequent verbal collocations, which offer, again, both linguistic and conceptual information.

Figure 4 shows the conceptual concordances in the entry of GROYNE. Linguistic markers such as *designed to* and *provide* explicitly relate the concept to its function, SHORE PROTECTION and TRAP AND RETAIN SAND.

Table 1. Linguistic and graphic definitional information for groyne [Faber et al. 2007]

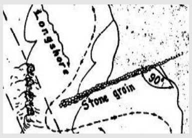
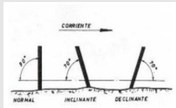
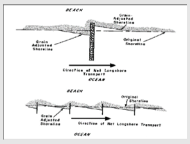
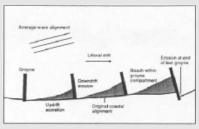
groyne		
▪ hard coastal defence structure [**IS_A**], ▪ *default value* (concrete, wood, steel, and/or rock) [**MADE_OF**]		
▪ perpendicular to shoreline [**HAS_LOCATION**]		
▪ protect a shore area, retard littoral drift, reduce longshore transport and prevent beach erosion [**HAS_FUNCTION**]		

Table 2. Textual context of *groyne*

Groynes are extremely cost-effective coastal defense measures, requiring little maintenance, and are one of the most common coastal defense structures. However, groynes are increasingly viewed as detrimental to the aesthetics of the coastline, and face strong opposition in many coastal communities.

TYPE

od only qualitatively. 5-3. Groins. a. General. (1) Groynes are barrier-type structures that extend from the
ks at the coast of this area existed of hard measures (groynes and seawall). The groins could not be kept-up
of inlet stabilization works (e.g., jetties, terminal groynes, offshore breakwaters)\par on the shorelines ad
wearing away of land by the action of natural forces. Groyne -- a shore protection structure, usually built pe
beach nourishment. Some coastal structures, including groynes, breakwaters and sills, can have a positive effe
ocial implications Coastal defence structures such as groynes and detached breakwaters generally increase the

MATERIAL

vant to most rubble mound structures such as seawalls, groynes, and breakwaters. It should be noted that in thi
sand, nourishing the beach compartments between them. Groynes may be made of wooden or rocky materials. They
ct will also include adding notching to existing stone groynes and extending outfall pipes. Unger said a sche

LOCATION

olution includes the following three elements: a rock groyne extending seaward from the existing shoreline, a
are intended consequences for people and wildlife. Groynes are structures built out from the shoreline, typ
line from receding. Along almost the entire coastline groynes are present, only at Warnemunde mitte there are

FUNCTION

the alignment of the updrift shoreline shifts as well. Groyne fields are designed to trap and retain sand, nour
ents, and thus a greater erosion rate. Breakwaters and groynes are effective in retaining sand and reducing ero
nearer the\par barrier may also be considered, using groynes to impede updrift movement of material at the\pa
ions to anchor the fill material. In either instance, groynes provide shore protection by modifying longshore
acceptable erosion of the downdrift shore. At first, a groyne field interrupts the longshore movement of sand i
ngth of beach to be protected. The basic purposes of a groyne are to modify the longshore movement of sand and

Figure 4. Conceptual concordances in the entry of GROYNE

Finally, different multilingual terminological choices are shown for every entry associated to the first hierarchical level of the searched concept. As can be seen in Figure 4, terminological variation is also reflected (two variants for Greek and English).

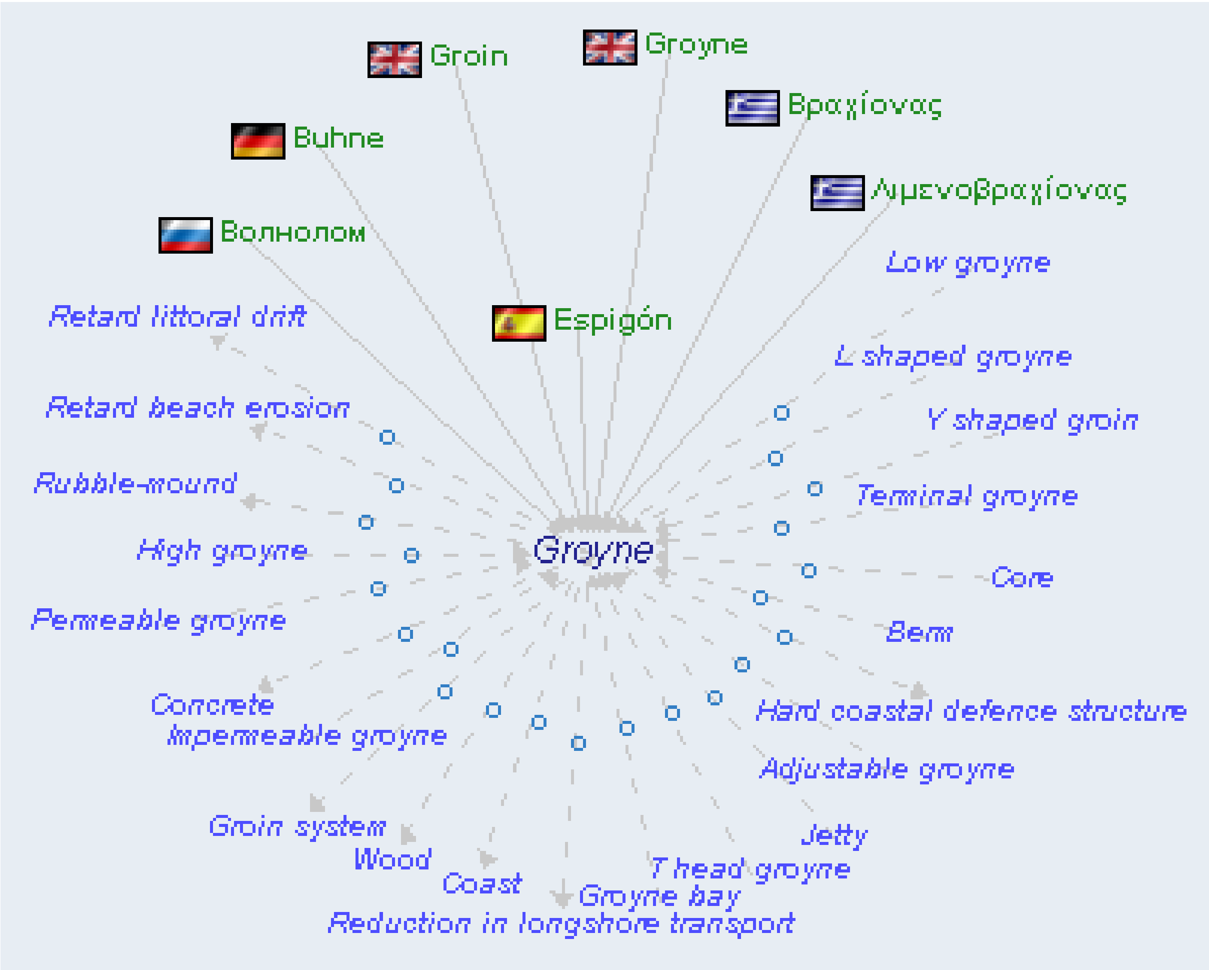


Figure 5. Multilingual terminological choices for GROYNE

In EcoLexicon, the visual representation of knowledge is thus two-fold. As shown in the groyne networks (Figures 2 and 5), our TKB provides users with an interface based on infographics. Infographics are widely used in statistics through charts, diagrams, tables, maps, and the like [*cf.* Newsom and Haynes 2004: 236] and are known to facilitate quick communication and create clear mental images of complex knowledge.

The user retrieves different configurations by surfing from one concept to another. Each configuration focuses on a two-level hierarchy of a central concept. Thus, these networks take a different shape every time a user clicks on a particular node. Therefore, each entry of EcoLexicon provides a great amount of interrelated information. In Figure 6, the entire GROYNE entry is shown. Users do not have to see all this information at the same time, but can browse through the different windows and resources according to their needs.

Under the tag ‘Dominios’ an ontological structure shows the exact position of the concept in the class hierarchy of the EE. GROYNE, for example, *is_a* CONSTRUCTION (bottom-left corner of the window). The concept definition is shown when the cursor is placed on the concept. Contexts (top window with black contour) and concordances (bottom window with black contour) appear when clicking on the terms and inform different users about both conceptual and linguistic aspects. Graphical resources are displayed when clicking on the links in the box ‘Resources’ (in the left-hand margin towards the middle), which are selected according to definitional information. At a more fine-grained level, conceptual relations are displayed in a dynamic network of related concepts (right-hand side of the window). The terminological units, under the tag ‘Terms’, designate the concept in English and Spanish: ‘*groyne*’ and its variant ‘*groin*’, and ‘*espigón*’, respectively (top left-hand corner). In the next sections we focus on the contextualization of both dynamic networks and terminological units.

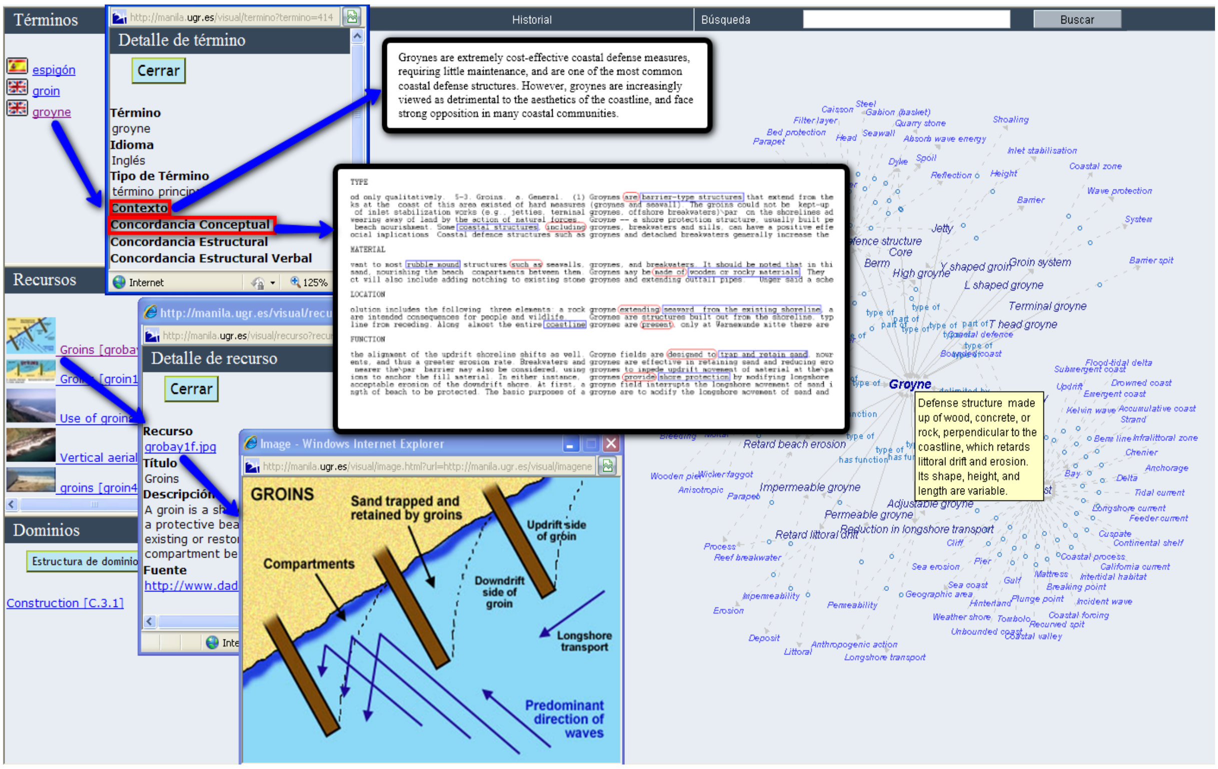


Figure 6. The entry of GROYNE in the user interface of EcoLexicon

3. Conceptual contextualization

In knowledge modelling, concepts are very often classified according to very different dimensions (shape, function, colour, etc.). Multidimensionality [Kageura, 1997] is commonly regarded as a way of enriching traditional static representations, enhancing knowledge acquisition through different points of view in the same conceptual network [León Araúz and Faber, 2010]. As is well-known, the more relations that users are able to activate through a particular concept, the more knowledge they are likely to possess for the domain. In such a wide domain as the environment, multidimensionality increases the number of possible relations activated by specialized concepts, since it is also intimately linked to the semantic roles concepts may play. In a process-oriented domain [Faber et al., 2006] the same concept may act as an AGENT or a PATIENT, as an active PROCESS or a RESULT. For example, the concept WATER can be either an AGENT (in the process of EROSION) or a PATIENT (in WATER TREATMENT), which implies that WATER can be related to other concepts through the conceptual relation *causes* as well as *affected_by*. However, the environmental domain has caused a great deal of information overload, which ends up jeopardizing knowledge acquisition.

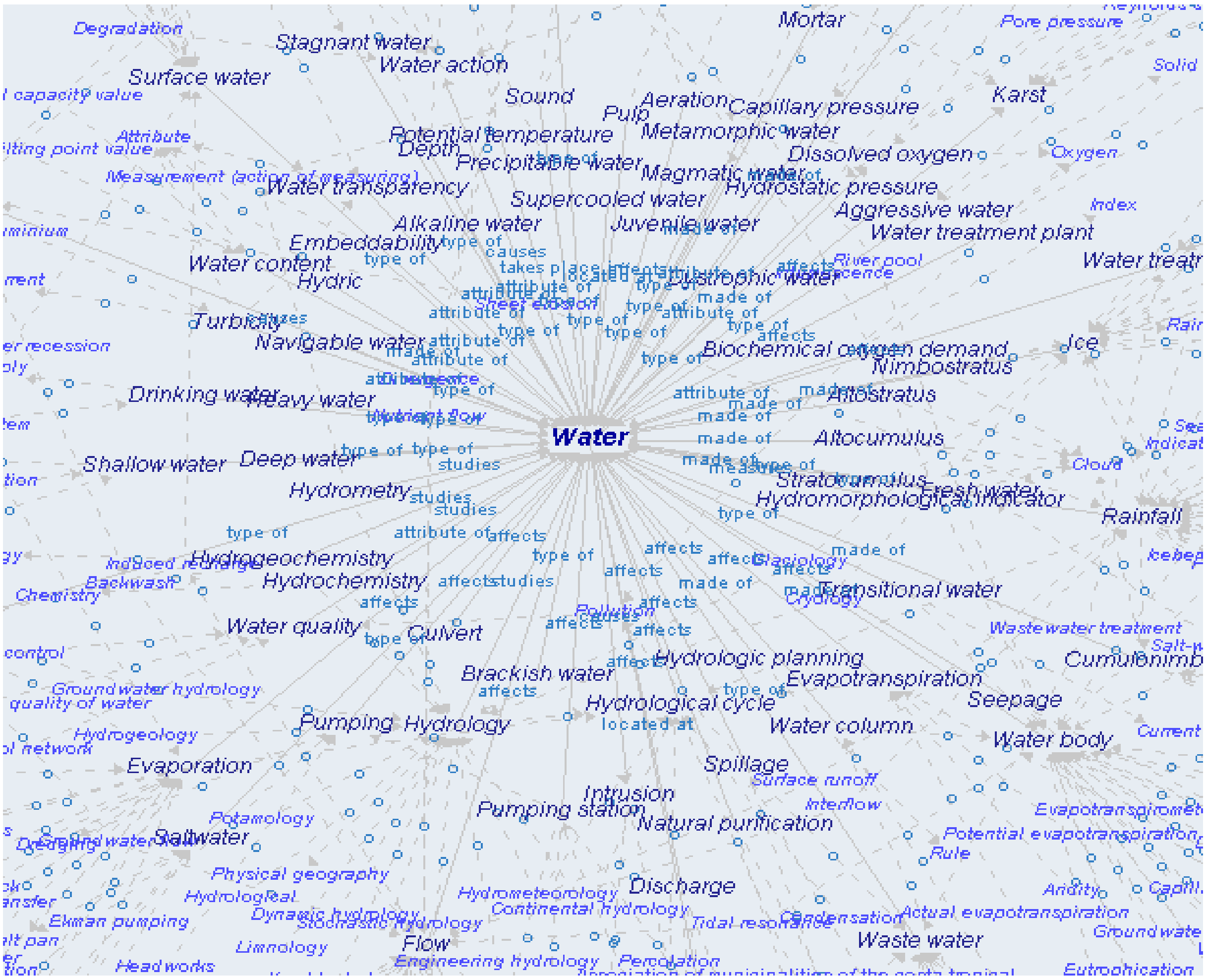


Figure 7. Information overload in the network of WATER

This is not only due to its wide scope, but especially to the fact that multiple dimensions are not always compatible but context-dependent. Although concepts are entrenched cognitive routines which are interrelated in various ways facilitating their co-activation, they actually retain enough autonomy that the execution of one does not necessarily entail the activation of all of the rest [Langacker, 1987: 162]. This is the case of certain concepts such as WATER (Figure 7). We call them versatile concepts because they have such a low degree of specificity that they can be involved in a myriad of events. For instance, even though WATER subtypes, such as PRECIPITABLE WATER, DRINKING WATER and NAVIGABLE WATER, all represent the same facet *function*, strictly speaking, they are not coordinate concepts, because they belong to different environmental paradigms that rarely coincide, if ever, in time or space. The same applies to WATER as an EROSION AGENT or as a PATIENT in a WATER TREATMENT PLANT.

Yeh and Barsalou [2006] state that when situations are not ignored, but incorporated into a cognitive task, processing becomes more tractable. In the same way, any specialized domain reflects different situations in which certain conceptual dimensions become more or less salient. As a result, a more believable representational system should account for reconceptualization according to the situated nature of concepts. Rather than being decontextualized and stable, conceptual representations should be dynamically contextualized to support diverse courses of goal pursuit [Barsalou, 2005: 628].

In EcoLexicon, overloaded concepts are reconceptualised according to two contextual factors: domain membership and semantic role. We have divided the environmental field in different contextual domains according to corpus information and expert collaboration: HYDROLOGY, GEOLOGY, METEOROLOGY, BIOLOGY, CHEMISTRY, ENGINEERING/CONSTRUCTION, WATER TREATMENT/SUPPLY, COASTAL PROCESSES and NAVIGATION. Domain membership restricts concepts' relational behaviour according to how their referents interact in the real world.

On the other hand, semantic role reconceptualization is domain-independent and offers new networks in the form of upper-level conceptual classes. In this way, users can visualize how concepts like WATER behave either as an AGENT or a PATIENT in all kinds of events. This highlights certain relational constraints associated to the natural aspect of concepts and not to those of their referents. Thus, role-dependent networks will be characterized by a certain type of relations. Interestingly enough, hierarchical relations are invariable parameters [León Araúz and Faber, 2010]. Entities may *have parts* or be *part of* other wholes whether they are AGENTS or PATIENTS, but that is not the case for non-hierarchical relations. If an entity behaves like a PATIENT it cannot *affect* anything, as it would then become an AGENT. Prototypically, a PATIENT can only activate its inverse relation, *affected_by*.

3.1 Role-based constraints

Role-based relational constraints are applied to individual concepts according to their own perspective in a given proposition. For example, in WATER CYCLE *affects* WATER, WATER is a PATIENT. However, if a role-based domain was to be associated with WATER CYCLE, this would require the application of agent-based constraints. As mentioned before, role-based constraints apply for non-hierarchical relations. Hierarchical ones are always activated, whether concepts are AGENTS or PATIENTS. Moreover, this kind of constraints can only be applied to the first hierarchical level, since they are focused on a particular concept and not its whole conceptual proposition. In the next figures, the overloaded network of WATER (Figure 8) is restricted according to the AGENT role (Figure 9).

Actually, role-based domains by themselves are not sufficient to reconceptualize knowledge in a meaningful way. In the role-free network, WATER appears linked to 72 concepts, whereas in the role-based one, WATER is related to 50. Despite the difference, the concept still appears overloaded, especially once the second hierarchical level is displayed. However, contextual domains, although usually dominated by one role, restrict relational power of versatile concepts in a more quantitative way.

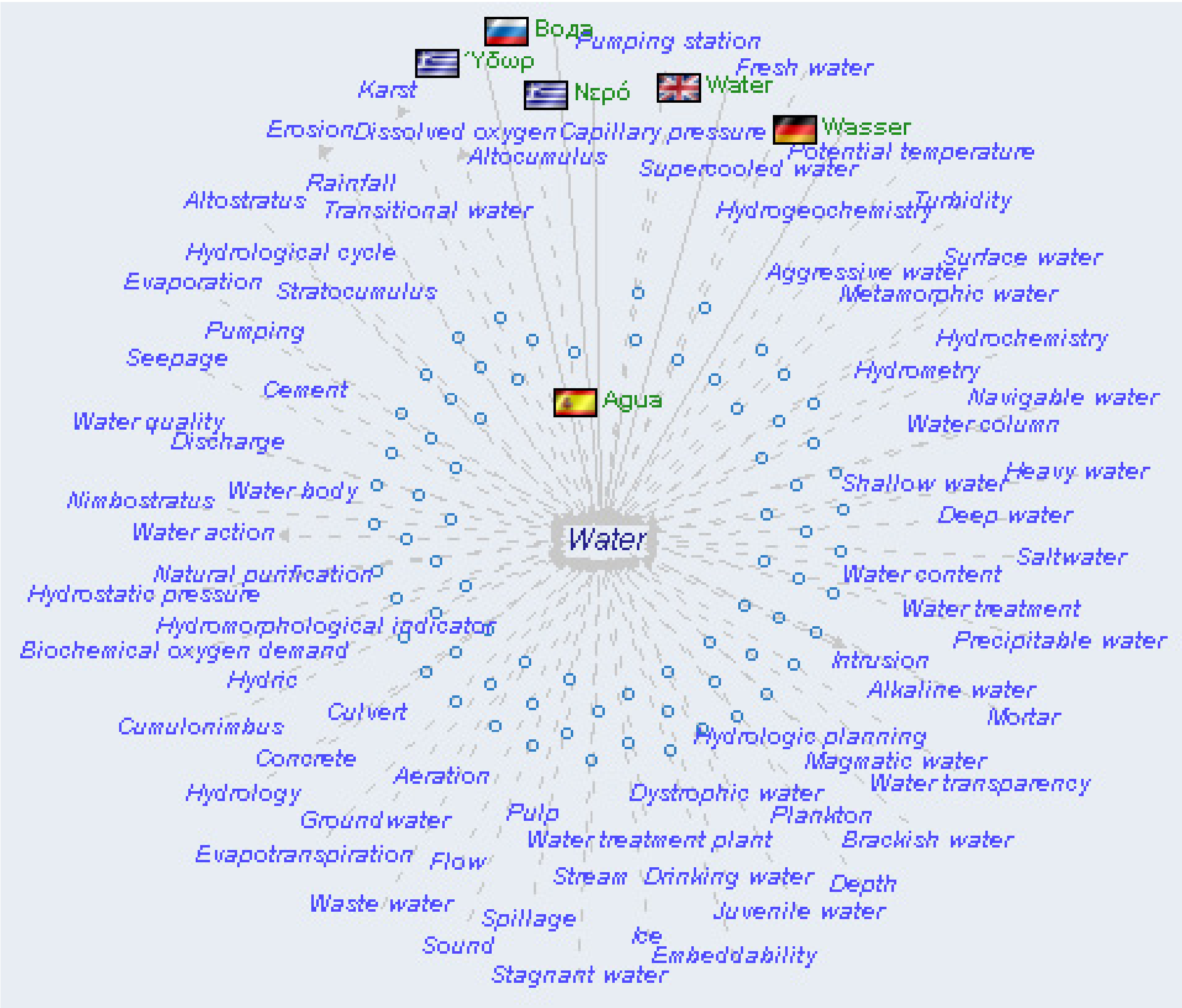


Figure 8. Role-free network of WATER

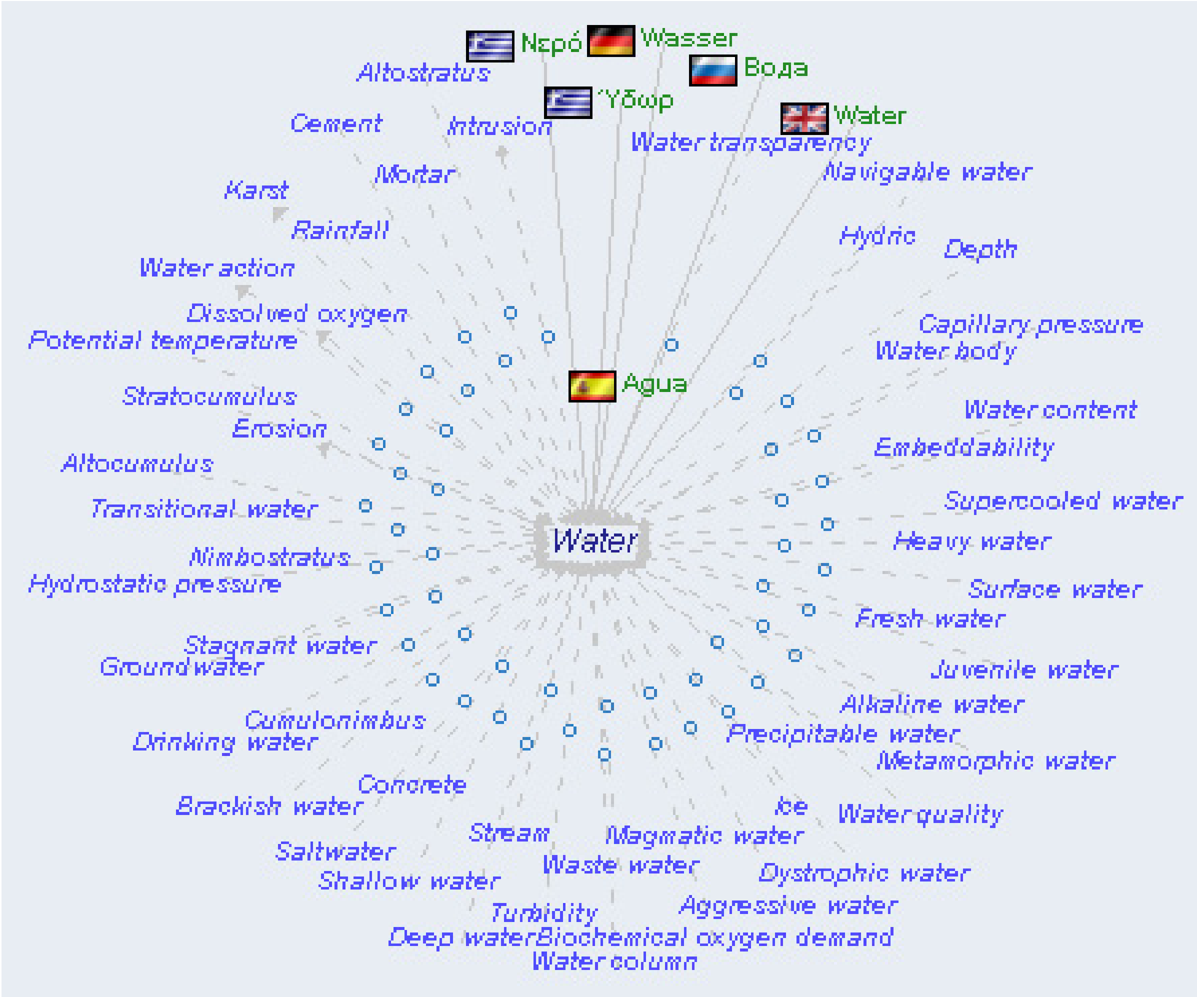


Figure 9. Agent-based network of WATER

3.2 Domain-based constraints

Our contextual domains have been allocated in a similar way as the General European Multilingual Environmental Thesaurus, whose structure is based on themes and descriptors, reflecting a systematic, category or discipline-oriented perspective [GEMET, 2004]. These domains can also be related to the notion of micro-theories, which are theories of some topic, e.g. a theory of mechanics, chemical elements, etc. Micro-theories might make different assumptions or simplifications about the world with contexts providing a mechanism for recording and reasoning using these assumptions [Guha 1991: 41].

In this way, our contextual domains provide the clues to simplify the background situations in which concepts can occur in reality. Domain-based constraints are neither applied to individual concepts nor to individual relations, since one concept can be activated in different contexts or use the same relations but with different values. Constraints are instead applied to conceptual propositions [León Araúz et al., 2009]. For instance, CONCRETE is linked to WATER through a *made_of* relation, but this proposition is irrelevant if users only want to know how

WATER naturally interacts with the landscape or how it is purified from contaminants. Consequently, the proposition CONCRETE *made_of* WATER will only appear in an ENGINEERING/CONSTRUCTION context. As a result, when constraints are applied, WATER only shows relevant dimensions for each contextual domain. In Figure 10 WATER is only linked to propositions belonging to the context of ENGINEERING/CONSTRUCTION:

However, in Figure 11 the GEOLOGY context shows WATER in a new structure with other concepts and relations:

The number of conceptual relations changes from one network to another, as WATER is not equally relevant in all contextual domains. Furthermore, relation types differ too, which also highlights the changing nature of WATER's internal structure in each case. For example, in the ENGINEERING/CONSTRUCTION context domain, most relations are *made_of* and *affects*, whereas in the GEOLOGY domain, *causes* and *type_of* stand out. *Affects* is also shared by the GEOLOGY domain, but the arrow direction shows a different perspective: in geological contexts WATER is a much more active AGENT than in ENGINEERING/CONSTRUCTION, where the concept is more subject to changes (PATIENT). Finally, WATER is not always related to the same concept types. In ENGINEERING/CONSTRUCTION, WATER is only linked to artificial entities or processes (PUMPING, CONCRETE, CULVERT), while in GEOLOGY it is primarily related to natural ones (EROSION, GROUNDWATER, SEEPAGE).

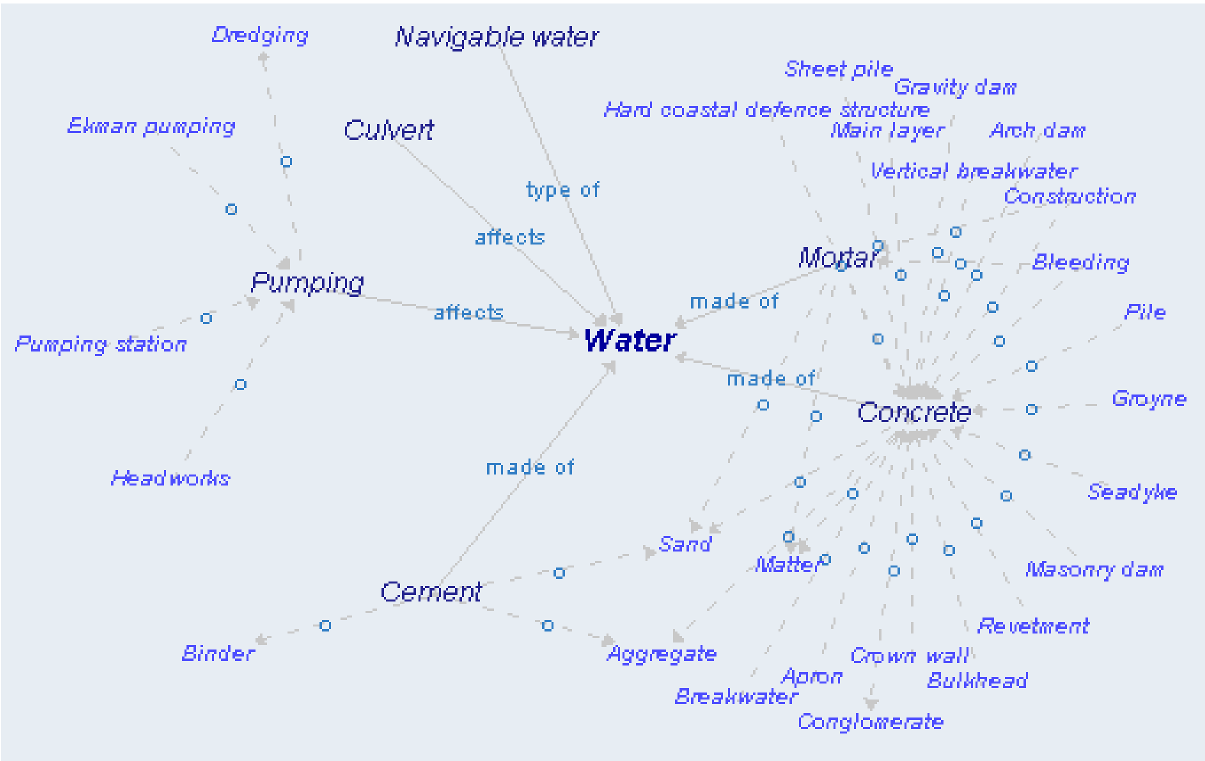


Figure 10. WATER in the ENGINEERING/CONSTRUCTION contextual domain

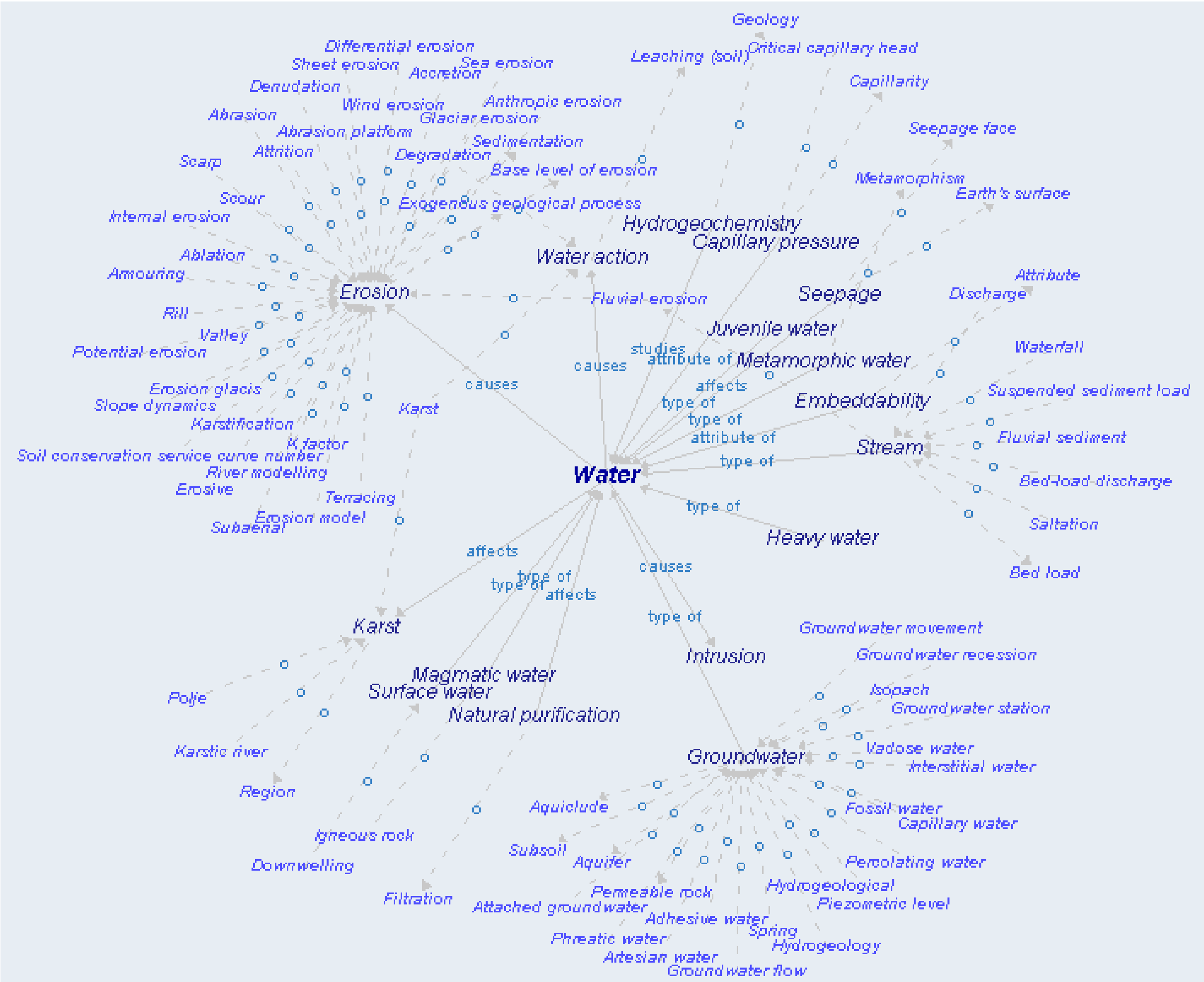


Figure 11. WATER **in the GEOLOGY contextual domain**

3.3 Intersection of role- and domain-based constraints

A new reconceptualization can take place with the intersection of role- and domain-based constraints. For example, WATER can be framed as an AGENT (Figure 12) or a PATIENT (Figure 13) or even both (Figure 14) within the HYDROLOGY context.

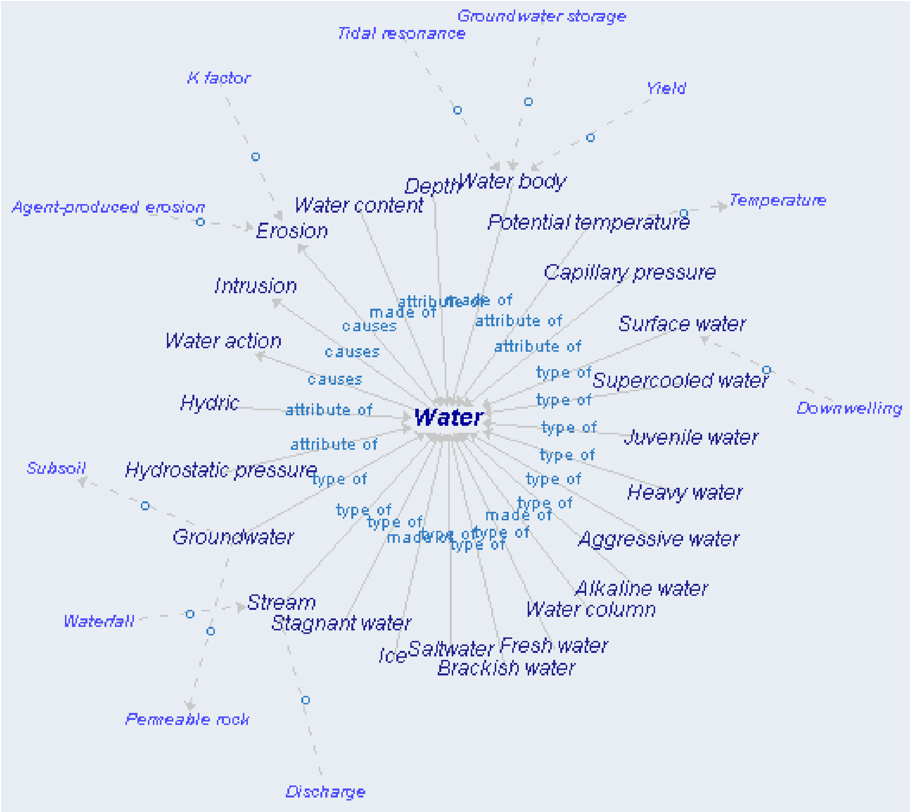


Figure 12. WATER as an AGENT in **HYDROLOGY**

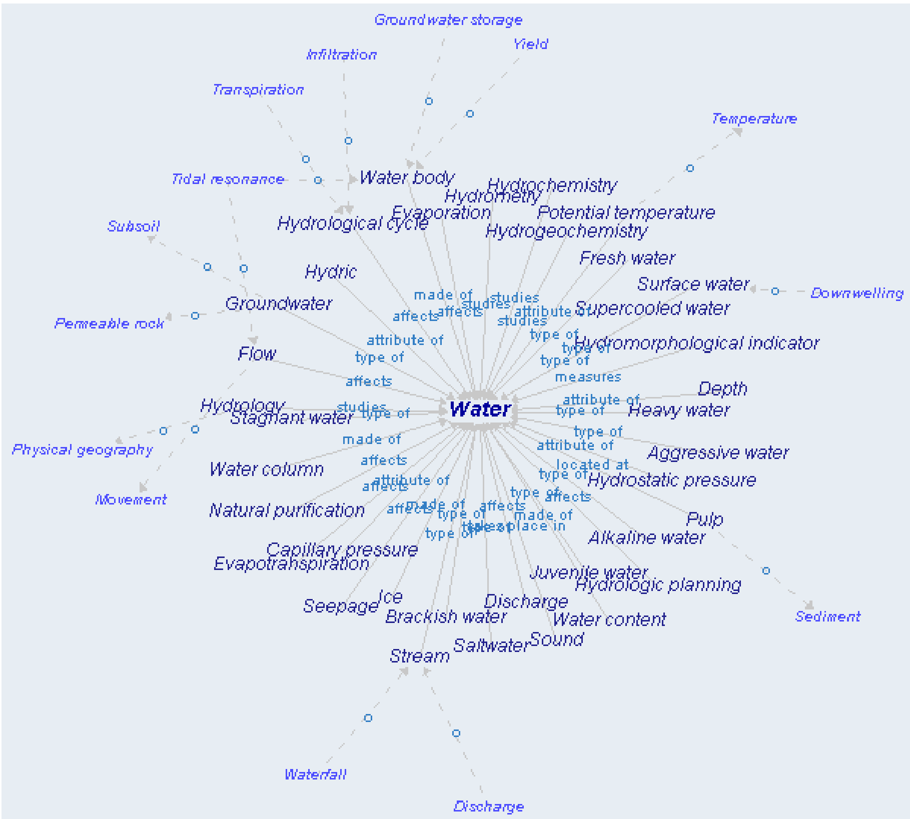


Figure 13. WATER as a PATIENT in **HYDROLOGY**

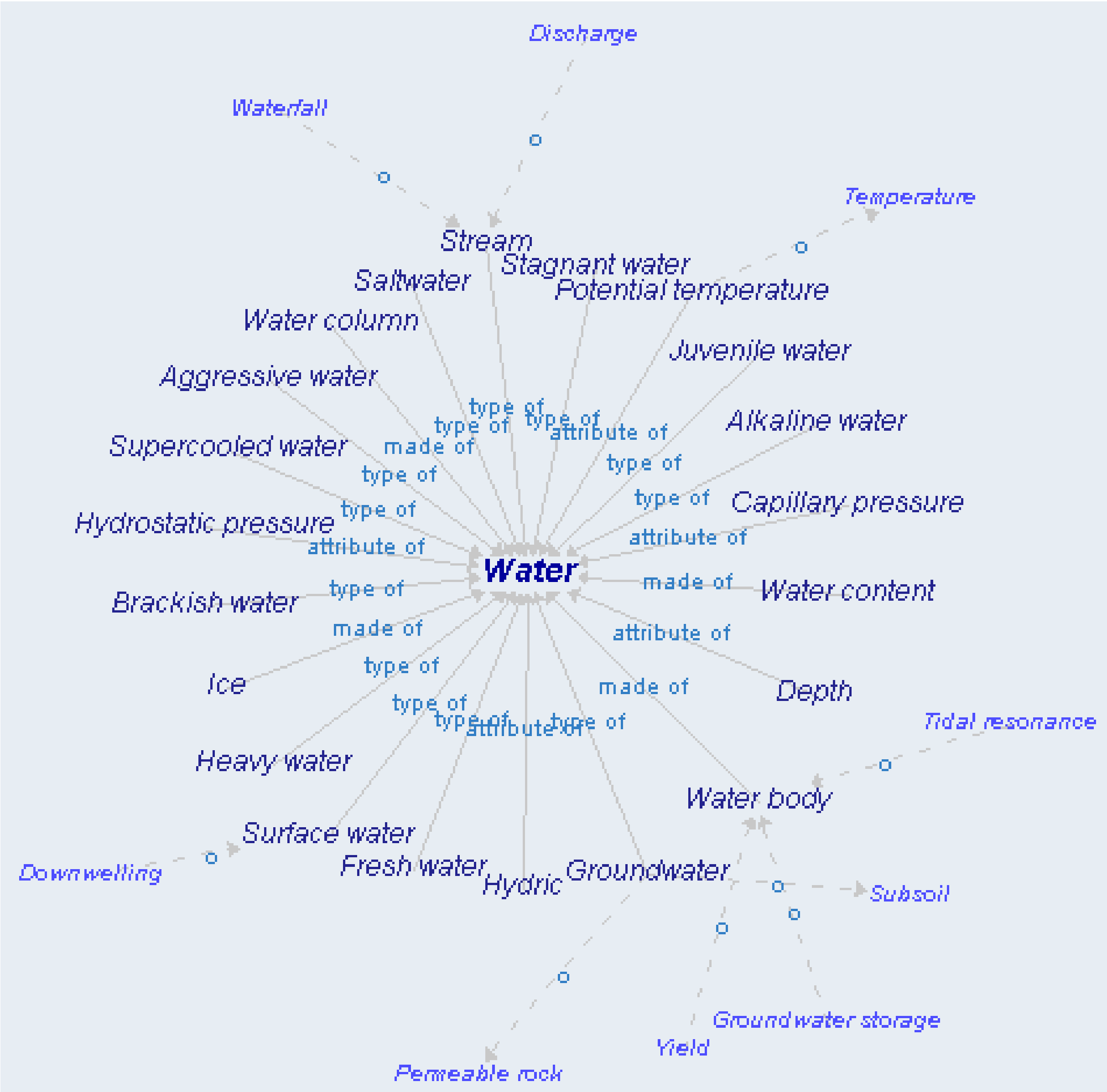


Figure 14. WATER **as an** AGENT **and** PATIENT **in HYDROLOGY**

Now, the first level appears constrained according to different roles in a particular contextual domain, which at the same time applies for the second level. It is worth noting that Figure 14 only shows hierarchical relations (*type_of, attribute_of*, *made_of*), because these are the only ones shared by concepts that can be AGENTS or PATIENTS. In Figure 12, however, the representation adds the relation *causes*, typical of AGENTS, and in Figure 13, it adds propositions where WATER is *affected_by*, *measured*, *studied* or *located_at*.

4. Terminological contextualization

The environmental domain is a recent and multidisciplinary science where conceptual overlapping can easily arise. Different disciplines deal with the same subject in different terms and, consequently, meaning and conceptual networks can vary. However, due to the lack of univocity in specialized languages, contextualization is also needed at the linguistic level. In this case, concepts may receive different designations and still be the same concept, which means that there will be no contextualization at the conceptual level but linguistic choices will be determined by different factors, such as contextual domains and user type or situation. For example, a term may be activated in several contextual domains – or even in the same domain – but it may refer to different concepts, thus creating the well-known phenomenon of polysemy. Also, different terms can express the same concept in the same or several contextual domains (synonymy). However, synonymy is only apparent, since terms should be selected according to domains and usage. Terminological contextualization is thus based on a more pragmatic perspective, whereas conceptual contextualization stems from a more cognitive point of view.

4.1 Domain-based constraints

The concept MUD may be referred to as *mud* or *sludge*. It is the same concept because it has exactly the same composition, colour, etc. At first sight they could be regarded as simple synonyms. In many dictionaries they are given as equivalents and are described in circular definitions. However, only in a WATER TREATMENT discourse *sludge* prevails over *mud*. As a result, with this other type of contextualization, users manage to cover both cognitive and communicative needs. Not only does the concept MUD show a different conceptualization in a WATER TREATMENT domain, but also a different designation.

Another example can be found in compound names, such as *beach erosion*. EROSION has different subtypes according to different dimensions, depending on its AGENT (wind erosion, water erosion, etc.), its PATIENT/LOCATION (beach erosion, soil erosion) or the RESULT it may cause (sheet erosion, rill erosion). Some of these dimensions can be overridden according to contextual domains. For example, if users searched for EROSION in the contextual domain of COASTAL PROCESSES, they would get the prototypical designation of *beach erosion*, which focalizes the potential meaning of EROSION.

4.2 Usage-based constraints

Other term preferences related to contextual domains are at the same time linked to use situations. For instance, *H_2O* and/or *water* are more or less frequently used depending on the domain. Both of the terms are used in ENGINEERING/CONSTRUCTION and WATER TREATMENT, whereas *H_2O* is never used in the GEOLOGY domain and is preferred over *water* in the CHEMISTRY domain.

Register thus plays an important role and triggers different variants e.g., geographical variants, such as *groyne* (British English) and *groin* (American English); and diaphasic variants, such as the continuum from formal to informal in *thermal low pressure system*, *thermal low*, *thermal trough* and *heat low*. These intralinguistic differentiations are extremely interesting for any kind of user group. Experts may be more interested in a more formal discourse where *thermal trough* is more likely to appear, but in the case of addressing lay receivers, they might prefer to use *heat low*. The same happens with translators, whose terminological choice will vary according to the text type they need to produce.

4.3 Intersection of domain- and usage-based constraints

The intersection of domain- and usage-based constraints in EcoLexicon is reflected through what we call Textual Contexts (TCs), which are carefully selected from real texts.

In Table 3, TCs have been assigned to different contextual domains according to the way in which *water* appears related to other domain-specific concepts (in bold). Users can appreciate the changing behaviour of WATER across three different domains (ENGINEERING/CONSTRUCTION, GEOLOGY, WATER TREATMENT) in two ways: (1) the specialized concepts surrounding water change from one domain to another and (2) the designation of a concept may also change accordingly. These relations become explicit through linguistic markers such as *consists of*, *causes*, etc. (in italics).

Table 3. *Water* TCs in ENGINEERING/CONSTRUCTION, GEOLOGY and WATER TREATMENT

TEXTUAL CONTEXT IN ENGINEERING/CONSTRUCTION	
1	Fine aggregate **concrete** *consists of* a mixture of Portland cement, fine aggregate (sand) and **water**, so proportioned and mixed as to provide a pumpable fine aggregate **concrete**. Fine aggregate **concrete** *has a* typical mix **water**/cement ratio of 0.65 to 0.75.
2	The heat evolution of **cement** A at w/c = 0.40 was measured *using* thermal calorimetry at 30ºC for hydration with both **H_2O** and D_2O.
TEXTUAL CONTEXT IN GEOLOGY	
3	Sometimes, as layers of **rock** are steeply uplifted, the bonding of one layer to another may be *weakened by the action of* **water** or *other agents of* **erosion**.
4	Running **water** *causes* **erosion** of **soil** and **rocks**. This is done by the friction between the constant movement of the **water** and the still **rock** or **soil**. Soil is *washed away* by running **water**.

TEXTUAL CONTEXT IN WATER TREATMENT	
5	Some of this clear **water** is decanted *from* the **tank** *into* an **effluent lagoon** where it *undergoes* **UV disinfection**, while some of the settled **sludge** is pumped to **sludge ponds**. Water exiting the treatment process at the downstream end of the **effluent lagoon** is pumped to storage, and *reused for* **irrigation**.
6	Under normal conditions the half-lifetime of the direct reaction of **chlorine** on **chlorite** has a value of 10^{-5} s. When dissolved in **water**, clorine is **hydrolyzed** according to the reaction: $Cl_2 + \mathbf{H_2O} = HOCl + HCl$

Use situations are reflected providing a different TC for each register within each domain. In the case of TC2 or TC6, the use of H_2O clearly implies a specialised register. In contrast, more didactic TCs, such as TC1, TC3 and TC5, show more explicit information thanks to a higher density of linguistic markers.

5. Conclusions

As the Environment is a recent and multidisciplinary field of study, building a coherent TKB implies a conscious and continuous effort to provide the changing and dynamic nature of the field to the TKB users, while at the same time helping them to extract exactly the kind of information they are looking for. EcoLexicon provides this to the end users by coherently organizing the information at all levels in a domain event and applying definitional templates, whereas at the same time it provides the necessary dynamicity through conceptual and terminological recontextualization.

Recontextualization provides a way of representing the dynamic and multidimensional nature of concepts and terms. On the one hand, conceptual contextualization offers a qualitative criterion for the representation of specialized concepts in line with the workings of the human conceptual system. Moreover, it is a quantitative solution to the problem of information overload, as it significantly reduces irrelevant context-free information. On the other hand, terminological contextualization guides users in selecting the most adequate term for each discourse, according to contextual domains and use situation.

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