

### *Affordances theory in multilingualism studies*

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#### Abstract

The concept of affordances originating in Gibson's work (Gibson, 1977) is gaining ground in multilingualism studies (cf. Aronin and Singleton, 2010; Singleton and Aronin, 2007; Dewaele, 2010). Nevertheless, studies investigating affordances in respect of teaching, learning or using languages are still somewhat rare and tend to treat isolated aspects of multilingualism. This is despite the fact that the theory of affordances can actually provide a valuable, supplementary, up-to-date framework within which a clearer, sharper description and explication of the intriguing range of attributes of multilingual communities, educational institutions and individuals, as well as teaching practices, become feasible. It is important that not only researchers and practitioners (teachers, educators, parents, community and political actors) but also language users and learners themselves should be aware of how to identify or, if necessary, design new affordances for language acquisition and learning. The aim of this article is to adapt the concept of affordances to multilingualism studies and additional language teaching, and in so doing advance theoretical understanding in this context. To this end the article contains a brief summary of the findings so far available. The article also goes further into defining the ways of how affordances work in relation to multilingualism and second language teaching and puts forward an integrated model of affordances.

*Keywords:* affordances, multilingualism, second language learning, complexity, multiple language acquisition

The concept of affordances originating in Gibson's work (Gibson, 1977), is gaining momentum in multilingualism studies. This concept was tackled from a linguistic perspective some years ago by Segalowitz (2001). Later studies have treated affordances from an applied linguistics perspective with regard both to learning and to teaching second and further languages (Dewaele, 2010; Otwinowska-Kasztelanic 2009, 2011; Van Lier, 2007), relative to content and language integrated learning (cf. Järvinen, n.d.) and in connection with the personal characteristics of multilingual users and learners (Singleton & Aronin, 2007). Aronin and Singleton (2010) took a wider perspective on affordances and language use and put forward the notions of *social language affordances* and *individual language affordances*. They pointed out, inter alia, that social language affordances are prerequisite to individual language affordances. It remains the case, however, that studies dealing with the affordances of multilingualism are still thin on the ground and that their treatment is far from systematic.

In fact, it is rather the case that different aspects of multilingualism are explored from an affordances point of view according to what happens to be the research enthusiasms of the particular authors in question. This is regrettable, as the theory of affordances is potentially a very powerful point of departure and lends itself extremely well to investigating the nature of multilingualism in all its dimensions. It deserves more active and systematic use on the part of multilingualism researchers, since affordances can genuinely shed new light on multilingual phenomena, in particular, on second<sup>1</sup> and multiple language acquisition.

In order to make full use of the lens of affordances in language acquisition and teaching and multilingualism it is necessary to bring the concept of affordances into association and alignment with these areas of knowledge. To this end we first briefly summarize the relevant findings in the field and refer to some of Gibson's relevant key points, which certainly warrant more attention. Then we identify a range of manifestations of affordances and attempt a deeper, more acute characterization of the ways in which affordances are operative in the multilingual context in respect of the acquisition and learning of additional languages. We also propose an integrated model fusing complexity and affordances approaches with the widely recognized main elements of multilingualism, that is to say, settings, users and languages.

### What Are Affordances?

The typical response to the question "What are affordances" is "Well, these are possibilities, possibilities for action." While this is more or less true,

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<sup>1</sup> By *second language* here we mean languages other than mother tongue, that is, second and consecutive languages.

linking and limiting the idea of affordances to the notion of possibilities means losing sight of the heart of the matter, the whole reason for employing this concept. A. Deumert (personal communication, 2011) has shrewdly observed that there is a need to further clarify the term *affordances*, its theoretical underpinning and its advantages over other terms. *Affordances* is an expression commonly deployed in contemporary sociolinguistic work, yet its meaning is rarely specified to the extent of furnishing an explanation of what exactly is provided by the term *affordances* which goes beyond the denotation of existing terms.

What is routinely called “the theory of affordances” is not a fully-fledged theory, but rather a conceptual understanding shared across many fields. Let us begin our exploration of this issue with a look at the work of Gibson, who coined the term *affordance*. While brief explanations and references to Gibson’s oft-cited definition appear in most articles on affordances, here we will present elements of the notion which are to be found in Gibson’s (1979/1986) original writings on the topic, including aspects which are especially noteworthy in connection with multilingualism.

Gibson (1979/1986) notes that while the verb *to afford* is in the dictionary, the noun *affordance* is not. He had made it up. It is worth remembering that Gibson developed his affordance concept not with reference to the social or human sciences, but in its application to physics, optics, anatomy and the physiology of eye and brain. His creation of the affordances notion came out of his interest in vision and perception, first with regard to animals in the natural environment and then, by extension, to human beings. The idea was subsequently generalized to numerous fields of research and practice; thus, for example, it is very popular in fields as diverse as design, psychology and aviation.

The widely cited definition of *affordances* by Gibson (1979/1986) runs as follows: “The *affordances* of the environment is what it *offers* the animal, what it *provides* or *furnishes*, either for good or ill” (p. 127). The example of affordances given by the author also refers to the physical world.

If a surface of support with the four properties is also knee-high above the ground, it affords sitting on. We call it a seat in general, or a stool, bench, chair, and so on, in particular. It may be natural like a ledge or artificial like a couch. It may have various shapes, as long as its functional layout is that of a seat. Knee-high for a child is not the same as knee-high for an adult, so the affordance is relevant to the size of the individual. But if a surface is horizontal, flat, extended, rigid, and knee-high relative to a perceiver, it can in fact be sat upon. If it can be discriminated as having just these properties, it should *look* sit-on-able. If it does, the affordance is perceived visually. (Gibson, 1979/1986, p. 128)

As Gibson (1979/1986, p. 128) illustrates, terrestrial surfaces are climb-on-able, or fall-off-able, get-underneath-able, or bump-into-able relative to

the animal. "This is not the world of physics, but the world at the level of ecology", explains Gibson (1979/1986, p. 2). Remarkably, the ecological approach (Haugen, 1972; Hornberger, 2002) renders Gibson's vision closer to the field of society and language and language teaching and learning. The affordances of language in society – be it in the area of instruction and didactics or in the more general field of education and social context, draw from the original Gibson's literally ecological views but translate into something somewhat different in form, type, scale and manifestation, as they refer to the social dimension in greater measure than they refer to purely physical dimension.

Different physical dispositions and characteristics afford different behaviours for different animals, including the human species, and different kinds of encounters. The same objects or events can present different affordances for different actors; thus, for instance, grass presents different ranges of affordances for birds, animals and for people. In the same way, a book in a foreign language presents different affordances for learners and users with differing levels of mastery of this language.

Researchers from different disciplines developed those particular aspects of affordances deemed relevant and important for their respective fields. Psychologists, and design engineers in aviation and ergonomics developed the idea further. Thus, for example, the aspect of perception – the noticeability of an affordance – was the dominant focus of interest when computer interfaces or door handles were being designed.

### Gibson's Key Points

In search of further insights, let us address some of Gibson's original insights which we feel are especially important in the context of a discussion of multilingualism and additional language learning. These elements recur as leitmotifs through his books, but have not, to our knowledge, been given the attention they warrant. The relevant key elements we are thinking of are:

- affordances being furnished according to the size of an animal;
- the mutuality of animal and environment;
- nesting;
- information about the self accompanying information about the environment, the two being inseparable.

We will begin with the last of these, to which we wish to give special emphasis, because it has not yet been, as far as we know, *directly* connected to the teaching, learning and use of multiple languages although it has a considerable bearing on it. This point, *information about the self*, to our mind, corresponds with and complements awareness phenomena, also a recently

developing topic. Here is what Gibson (1979/1986) says about this issue: "Information about the self accompanies information about the environment, and the two are inseparable. . . . Perception has two poles, the subjective and the objective, and information is available to specify both. One perceives the environment and coperceives oneself" (p. 126).

The concept of linguistic and metalinguistic awareness (see, e.g., Jessner, 2006) also has to do with information about the self. It turns the attention of the language apprentice towards the language(s) she/he is concerned with and towards him/herself as a language learner and language user. When the two are coupled and placed in the context of affordances, information about the self receives more shades and aspects and is seen to manifest an active, dynamic role in the language learning enterprise. In the same way as animals need to be aware of their location, as well as the disposition of objects and other animals, for successful hunting, eating, or hiding, so language users and language learners need to be aware of their needs, of where they stand with regard to other languages and other speakers, of their progress as language acquirers, and of the prospects for further language acquisition and for language use.

The concomitant notions of *aperture vision*, *ambulatory vision* and *ambient vision* discussed in Gibson's works also translate well into the perspectives of language and metalinguistic awareness. Gibson (1979/1986, pp. 1-2) pointed out that ". . . in fact, they are kinds of vision we need in life, not just pictorial depth perception. We need to see all the way around at a given point of observation and to take different points of observation."

To see "where we are" at each particular moment is a biological necessity for survival (in the widest sense of this word). In sociolinguistic terms, the global locomotion of speakers and languages – mobility – is always opening up new horizons for language users and giving them an awareness of the possibilities and the importance of deploying other languages. Looking around and getting around are important not only in relation to visual perception but also, in humans, in relation to language use. To apperceive which language(s) and to which extent is/are needful for a person or a group in particular circumstances is of universal practical importance. This is what we must weigh in our everyday and long-term language-related decisions, as individuals and as communities. It is what educational authorities and political groups must constantly come back to in the language domain – evaluating the affordances and contemplating which affordances require to be added or removed. With respect to second language learning this points to the importance of a variety of indispensable kinds of self-monitoring. The implication of Gibson's idea is that second language teachers need to supply the affordances for such self observation – for learners to be able, for instance, to situate the skills they have gained in a given language at

particular times and in particular places in their relation to their skills in other languages, and to be able to reflect on their learning aims.

Let us turn now to the issue of affordances being furnished according to the size of an animal (Gibson, 1979/1986). In the context of acquiring and using language this postulate implies that affordances are always connected with the features of the learner and user as well as with the features of a language learnt and used. It also translates into the specificity of affordances for each actor; that is, what an affordance is for one person or group of learner-users does not correspond to what it is for another individual or group. It is clear, for example, that affordances for speakers of a heritage language would be different from affordances for speakers of a national or official language in the same setting.

Alternatively, an affordance may be perceived by some learner-users as an affordance which is not worth making anything of. Thus, it happens regularly in the immigration context that some immigrants, often the older ones, feel they will not be able to learn a new language, and so rely on continuing to communicate in their own language by living in their “bubble” – the family or community where the language of origin is regularly used. A striking example of this kind is the phenomena that characterized the Soviet republics such as Uzbekistan, Estonia and Latvia, where and when for decades ethnic Russians or Russian speaking people used to live but would use not more than just a very few words in Uzbek, Estonian or Latvian respectively. The affordances, that is, native speakers, books, culture, second language exposure, situations in which the use of the second language was appropriate were many, but were not utilized by thousands of people. Within the framework of second language teaching this notion that “affordances are furnished according to the size of an animal” tells us that it is sensible to individualize approaches to designing courseware, and methods and techniques of teaching/learning strategies.

With regard to the mutuality of animal and environment, according to Gibson (1979/1986), this signifies that the observer and the environment are complementary. For human beings the links to the environment, that is, social milieu, are not limited to the physical dimension, as in the case of animals. The emotional, moral, evaluative and intentional and cognitive vectors are no less real for people than the material composition of their environment. All of these, separately and together, offer a variety of affordances of different kinds and scope. With regard to the field of multilingualism and additional language acquisition we would define Gibson’s point in terms of *dynamic mutuality of identity and milieu*. The dynamic mutuality of identity and milieu is both a process and a result as each specific moment and each particular sociolinguistic situation provides a specific set of affordances. It is for educators, teachers and learners to make use of all the relevant affordances, or some part of them, or none of them.

The fourth key element is nesting, as termed by Gibson (1979/1986). According to him, *nesting* refers to the fact that “smaller units are embedded in the larger units”, as canyons are nested within mountains, trees are nested within canyons and leaves are nested within trees (p. 9). Nesting corresponds to (but is not the same as) the notion of *niche* in globalization studies and scaling properties in the complexity approach. We refer to it later in this article. An example of an affordance “nested” in a small area is the affordance for the unique whistle language used by the local inhabitants in the sierra of Oaxaca, Mexico – the Mazatecs. Specific geographical conditions, namely the rugged highland areas virtually without level ground, the hilly, mountainous terrain, and the profusion of valleys, can be seen as the particular set of affordances which lead to Mazatecs’ unique way of communicating over long distances (over 2 km) without the use of phones. Another example of a very small-scale phenomenon is the case of Boa Sr of the Andaman Islands, who had lived through the 2004 tsunami, the Japanese occupation and the diseases originally brought by British settlers; this person was the last native of the island chain who was fluent in Bo. Her recent death effectively annuls the affordance for this language. More generally, in language learning it typically is the case that smaller units (e.g., a family) have a different range of affordances than larger units (e.g., a school).

The above leitmotifs embody the holistic and complexity backdrop of Gibson’s affordances theory.

### Categorization of Affordances

There have been categorizations of affordances in literature which are relevant to the research areas both of language learning and of language in society. Some researchers have proposed a division between *social affordances* and *individual affordances* (e.g., Good, 2007; Heft, 2001). Thus, Andrea Scarantino (2003) suggested two scales of opposition with respect to the classification of affordances: surefire versus probability affordances and happening versus goal affordances. These can be briefly characterized as follows.

*Sure-fire affordances* are “affordances such that manifestation follows the triggering circumstances with certainty” (Scarantino, 2003, p. 959); for example, cows having lush grass pastures in summer, or, closer to our domain, the provision of English as a discipline (as L1 and as L2) and as a means of instruction in the United Kingdom and in Australia.

*Probability affordances*, on the other hand, are “such that the manifestation follows the triggering circumstances with some positive probability  $p$  less than 1” (Scarantino, 2003, p. 959-960). In early bilingual acquisition the *one person one language* strategy works very well in many cases probably because the

sure-fire affordances of each language are provided for a child. Some other parental strategies relying on circumstances of communication (such as a strategy of using the two languages interchangeably within and outside the family, a strategy of letting such factors as topic, situation, person, and place dictate which language should be used, or a "language-time" strategy: for example, one language in the morning and the other in the afternoon, or one language during the week and the other during the weekend), provide probability affordances for each language, which may be a less efficacious approach.

*Goal affordances* are "what makes an organism-involving event a DOING" (Scarantino, 2003, p. 958).

*Happening affordances* refer to manifestation in the triggering circumstances. Learning Esperanto would involve a doing. Being exposed to Polish in Warsaw is a happening affordance. In other words, doings are events triggered by the selection of a goal, while happenings are not so triggered. We can imagine that goal affordances are more time- and energy-consuming and are more difficult to pick up on and implement than happening affordances. And this fact has implications for the pedagogy of language teaching and for the formulation of language policy.

Happening and sure-fire affordances seem to be stronger predictors of success with language learning. On the other hand, maybe for some individuals, goal setting and motivation would push them to higher success levels. One must beware, of course, of seeing the differentiation of these categories in absolute terms.

As we have described elsewhere (Aronin & Singleton, 2010, 2012) *affordances of multilingualism* include *social language affordances* and *individual language affordances*, which cumulatively may be dubbed *language affordances*. Language affordances are affordances through the realization of which communication via a language or languages or the acquisition of language or languages is possible. We call affordances offered by a particular community (e.g., world, country, family) at a specific time which relate to licensing the use and acquisition of a language or languages, *social language affordances*. Affordances through the realization of which an individual can interact with/make use of a language or languages are *individual language affordances*.

Social language affordances are differently exemplified in each country or community. We can cite the example of the 18th century Habsburg Empire, where linguistic affordances were provided in respect of many languages, as described by Rindler-Schjerve and Vetter (2007). Contemporary Spain provides another example of the provision of social affordances for bilingualism/multilingualism in a number of its regions – Catalonia, Valencia, Galicia and the Basque Country – each region manifesting such affordances to a different scale (Cenoz, 2009; Guttierrez, Salgado, Fernandez, & Berg, 2007; Huguet, 2007; Lasagabaster, 2007; Safont Jordà, 2007).

We might also cite the case of Oxana, a Ukrainian feral child, who spent about six years with the dogs in a shed behind her house (Markmcdermott, 2010), thus being denied the social language affordances (Aronin & Singleton, 2010, 2012), a case which prompted our reflection that linguistic social affordances seem to “open the way” to individual linguistic affordances.

### Manifestations of Affordances

Research on multilingualism and additional language acquisition seen in an affordances perspective calls for a more exact identification of affordances. That is, we need to decide what kinds of properties in the sociolinguistic environment qualify as linguistic affordances. Having made some progress in this direction, we shall find it possible to arrive at a classification of linguistic affordances that can be typically found in a community, to inventorize in detail the affordances offered in specific sociolinguistic environments for particular languages and analyse and quantify the affordances in particular sociolinguistic environments in terms of types of affordances (e.g., material, ideational, goal/happening, sure-fire/probability).

Affordances come in all shapes and sizes. The many and various forms in which affordances manifest themselves of course constitute great diversity and complexity. They also account for the diversity of language learning outcomes and patterns of language use. As noted above, human beings invariably entangle emotional, moral, evaluative, intentional and cognitive elements in their interactions with the environment. Whereas for animals affordances are conceived as mainly involving objects and their attributes, for human beings they clearly include specifically human phenomena, such as cognitive, evaluative and emotional affordances. Thus we may incorporate in our inventory of linguistic affordances: events and happenings, assumptions and common knowledge, school buildings and libraries, curricula, knowledge of languages other than target languages, the degree of professionalism of language teachers, the availability of textbooks and dictionaries for learners, computers and monitors for listening to and observing correct pronunciation, native-speaker interlocutors, cognates between the languages known by an individual, and supporting parents. All of these so widely different things, which may be tangible or intangible, are affordances. These kinds of typically human affordances seem to us valid in many formal social settings. Clearly, language attitudes research, multiple language teaching and acquisition studies would benefit from looking into affordances of such types.

Legal provisions for granting official status to a language constitute language affordances. Phenomena of past, present or future can serve as af-

fordances for particular actions, as well as the events taking longer or shorter periods of time. Some affordances are spread over vast territories, others are available only in tiny niches. Let us consider some examples of affordances occurring in the form of long-time events. The colonization of Africa brought affordances for English, French and Portuguese to Cameroon. In its turn, decolonization in Africa provided affordances for the (approximately) 240 regional and tribal indigenous languages spoken in this country, and also in the long run served up affordances for the European languages.

Thus, the term *affordance* represents a general category denominating a spectrum of phenomena, which from other points of view are quite different, which may indeed seem to have nothing in common. Affordances that permeate the reality of language learning and language use are of a multitude of complexions: physical, as physical objects of a range of sizes and functions, from the pens and erasers of a poor Indian village to the impressive school halls, classes and dormitories of Eton College, or ephemeral, as in case of attitudes, feelings or perceived social decencies. One example of the operationalization of affordances in relation to language acquisition is the study by Dewaele (2010), where he links knowledge of typologically related languages to stronger affordances.

### How Affordances Work

Now let us see how affordances in their different manifestations work in society with regard to the acquisition and use of languages. For this let us consider the already mentioned lost affordance of Boa Sr and the language which has died together with her. In other instances of endangered languages, if the affordance of last speakers is picked up in a timely and energetic manner, the language may be saved. It is often the case, however, that by the time such an affordance is perceived, it is already too late for this single affordance to suffice. Other affordances have to be supplied in order for a language to be rescued: a thoroughgoing accumulation of speakers with good competence in the language, books, dictionaries, finance for collectors of and researchers into language data, schools, legal provisions, opportunities for the language to be used among the community, and so forth.

From such experiences and facts we can deduce the proposition that typically – to have an impact – the relevant affordances have to be available *in sets*. In second language learning, for performing an action or realizing a goal – such as memorizing ten words, understanding an L2 text, or, more ambitiously, mastering the basic structure of a language – one separate affordance is not enough. Rather, sets or packages of affordances are required to be furnished in order that the

action may be performed or the goal achieved. A set of affordances would include a variety of types: actions and material objects, emotions and feelings, and social affordances relative to a given community or country.

In the field of language teaching, the tertiary didactics developed by Hufeisen and Neuner (2004) in fact lists the set of affordances that were already available for the bilinguals who commenced the study of their third language (in that particular case English as L3 after German as L2). The work on receptive multilingualism by Marx (2007) in effect reveals affordances relevant to acquiring receptive skills generated by the interaction of the characteristics of the languages and the traits of the learners. Marx (2007) described a study in which speakers of German, with some knowledge of English, French, Spanish, Italian, Hungarian or Japanese, were asked to read texts in one of the Germanic languages unknown to them – Dutch, Swedish, Norwegian or Icelandic – and then answer seven questions in writing. In this study the author did not use the term *affordances*, but from our point of view she essentially demonstrated the effective deployment of affordances which a specific group of people, namely speakers of German, can make use of in order to acquire a passive knowledge of linguistically close languages.

Another illustration of affordances operating in concert comes from the sociology of language field. It relates to the classic concept of domain, developed by Joshua Fishman (1965) in his early seminal work “Who Speaks What Language to Whom and When?” Having analysed multilingual settings in order to establish the rationale behind the language choice of bilingual speakers, Fishman discovered that in stable bilingual contexts, the use of one language rather than another in certain situations is not accidental, but is customarily associated with specific settings, topics, and groups of interlocutors. He defined a domain as a “cluster of social situations typically constrained by a common set of behaviour rules’ and as a “social nexus which brings people together for a cluster of purposes” (p. 75).

In our view a domain can also be defined from the point of view of affordances theory as a peculiar cluster of affordances which together (as a set) ensure the use of particular language in a given setting. A domain, thus, is an environment which provides a substantial number of affordances favouring a specific language or specific languages (as opposed to another or other languages) in a multilingual society (Aronin & Singleton, 2010, p. 122; 2012, p. 180). A language domain is what it is, because it is the space-time where the most suitable affordances in respect of a given language or set of languages are conglomerated. This is why a domain is the most conducive time and space for a particular kind of language speaker to use a particular language or particular languages. In such an understanding we can consider the notion of

domain in the initial characterization offered by Fishman, who identified five domains: family, education, employment, friendship, and government and administration, but we may also broaden the focus to any desired extent in regard to a particular situation.

The complexity approach and the affordances approach make it clear why actual practices do not always allow us strictly to predict language choice in respect of a given meeting point of affordances, why sometimes domains have fuzzy borders and volatile outcomes. The affordances which happen to occur together within a particular domain are not necessarily perceived, or, if perceived, are not necessarily effectuated for various reasons outweighing the imperative to act on the affordance in a particular situation. For instance, in the work domain, where in countries such as Poland people (both immigrants and host minority language speakers) typically speak the official language of a country, language choice may be diverted by the happenstance of several speakers of the same minority language gathering by chance in a room for the performance of a given task. The fact of the possibility of countless significant diversions from any particular expected outcome is also in line with the so called “butterfly effect” in complexity theory, *the extreme sensitivity to initial conditions*.

Summing up how affordances work, we can state that:

- Sets of affordances are required to be available in order that a given action may be performed, a given goal attained.
- Each action or goal requires the availability of its own specific set of affordances.
- Exactly which, how many, and in what configuration affordances need to be present depends on the particular nature of the relevant action-goal, actor (speaker) and environment (sociolinguistic setting).

The practical implication of this perspective for researchers would be that it is of importance to identify the set of affordances pertaining to any particular goal. After determining the number and kinds of affordances, or specific affordances, it would be possible to start considering whether and how to make the vital affordances perceivable, to facilitate their effectuation, or to design the lacking affordances if needed.

### Further Theoretical Considerations

With regard to the theoretical dimension in this section of the article we will (a) argue for the significance of affordances theory in the context of multilingualism and language teaching, and (b) put forward a model integrating the basics of multilingualism affordances theory and the complexity approach.

The concept of affordances would be very beneficial to our field if it were developed further, to the point where it specifically engaged with issues in multilingualism and second language acquisition. Affordances theory is internally consistent and appropriate both in its abstract theoretical manifestation and in its variegated and detailed factual, material form. It is very applicable to the interrelated fields of knowledge associated with language, cognition and society. In contrast to other fields of research, where particular features of affordances are privileged, in multilingualism studies, virtually all dimensions of affordances are relevant (e.g., perception of affordances, effectuation of affordances, creation of affordances, identification of affordances) depending to an extent on the particular area of interest such as language acquisition, language teaching, language learning, family multilingualism, language policy, and so forth.

The affordances approach accords well with the basic tripartite division of the main elements in multilingualism into *speaker*, *settings* and *language* (Edwards, 1994). For these three basic elements we use a slightly different nomenclature: *user*, *environment* and *language* (Aronin & Singleton, 2012). The slight change of terminology is due to the fact that since 1994, when Edwards's book was published, the purview and perspectives of multilingualism studies have been broadened considerably. In response to this change we use what seems to us a more comprehensive terminology: *user* covers not only speakers but also signers and writers, and *environment* captures a wider range of phenomena than *setting*. Accommodating affordances theory to multilingualism studies we might represent the three basic elements of multilingualism using the triangle in Figure 1.

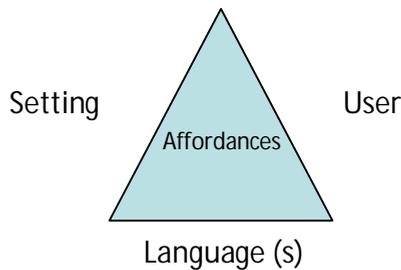


Figure 1 Affordances-generating tripartite frame of reference

The triangle enables us to visualize how affordances are generated at the cross-section of each two of the three sides of this triangle and of the three of them: in the space of interaction between setting and language, between language and user, between user and setting, as well in the interaction involving setting, user and language together. We may imagine that the imagi-

nary space inside the triangle is brim-full of affordances, specific for each particular setting, user, language or combination of languages.

The triangle model emphasizes the necessary and complex mutual tri-lateral interconnections and interactions between the learner/speaker and the milieu/context (Gibson's actor and environment), which generate affordances specific for each situation. With the help of this model we can consider affordances provided by settings to users and languages at any level of detail, with the desired degree of reference. The triangle may, as we have seen, be looked upon as a tripartite framework containing affordances generated by the interaction of the three basic aspects of multilingualism: user, environment and language. For each particular situation of any scale we can envisage a triangle (smaller or larger) specific to this scale containing affordances particular to the situation. For each particular situation, the affordances can be identified and then an informed decision on the value of their use can be taken. Thus, the coalescence of the three cornerstones of multilingualism, namely settings, user and language, and the concept of affordances, can prove fruitful.

The coadunation of affordances theory with a consideration of the three basic aspects of multilingualism yields a comprehensive and holistic view which is in line with the complexity science. Gibson (1979/1986) himself pointed out the adherence of his theory to "the kind of thinking that is beginning to be attempted in what is loosely called systems theory" (p. 2). At present, about 25 years later, with the further development of dynamic systems theory and its application to multilingualism and additional language acquisition, the connection is more (and increasingly) obvious (on the complexity approach in the field see e.g., Aronin & Singleton, 2008; Herdina & Jessner, 2002; Larsen-Freeman, 1997, 2002, 2006).

As already indicated, the tripartite frame of reference described above (Figure 1) can be used as a methodological tool for zooming into sociolinguistic or language teaching contexts of any scale, representing particular affordances generated by the interplay of language, user and setting elements. One suggestion in this connection (made by one of the anonymous reviewers of this article) would be the use of multi-level modelling (hierarchical linear models, or nested models) for such data. In multi-level analysis data sets are hierarchially nested, which might provide a suitable statistical framework for the multiple layers of the phenomena in question.

In terms of complexity science the model and the reality it represents have *scaling qualities*. This basic notion of complexity thinking refers to the concept of a similar pattern or appearance being present at many different levels of scale. One of the basic examples of scaling qualities and self-similar-

sets, the Sierpinski triangle shown in Figure 2 is a fractal<sup>2</sup> which shows the idea of self-similarity clearly. Each part of this strictly self-similar structure contains an exact replica of the whole.

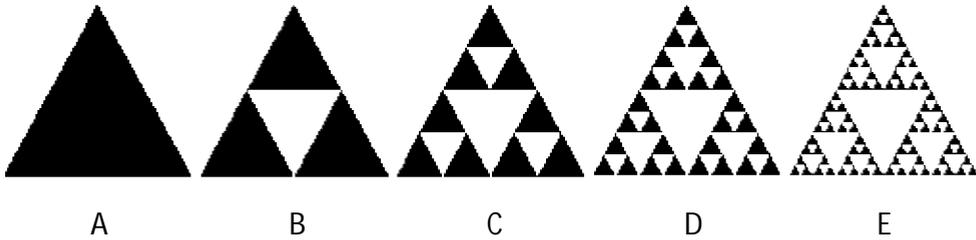


Figure 2 The Sierpinski triangle

We can imagine that Triangle A in Figure 2 represents a frame with affordances for teaching English as a foreign language in Poland; Triangle B (the big one embracing three smaller black triangles and one smaller white triangle) represents frames with affordances with respect to teaching EFL in the three major Polish cities; Triangle C represents frames with affordances for teaching EFL at the schools of these cities; Triangle D represents frames with affordances for teaching EFL in individual classes, and so on. Obviously, the real content of each triangle/frame, that is, the set of affordances, would not be exactly the same in different cities, schools and classes, but we may have reason to believe that they would be similar. This is because each frame contains the same three variables, elements which are always present in language teaching or language use: language, user and setting. Some elements may be less to the fore than the others in certain situations, but they are always present.

This model based on the Sierpinski triangle (Figure 2) can also be interpreted as a representation of the language domains as taken more widely. Thus, for example, Triangle A may represent the educational domain in a country; Triangle B may represent the tertiary, secondary and primary educational levels; Triangle C may represent particular kinds of schools; Triangle D may represent individual schools; Triangle E may represent specific classes, and so on. These examples may appear to resemble a traditional hierarchy but they in fact do not. The model incorporates and presents a complexity view based on a set of underlying assumptions which differ from those of classical science (Byrne, 1997; Capra, 2005). It allows us to reflect the complexity of the real world, while recognizing the common constitutive elements: settings, user and language.

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<sup>2</sup> A fractal is a geometric pattern that is repeated at ever smaller scales to produce irregular shapes and surfaces that cannot be represented by classical geometry (Fractal, n.d.).

Each scale, however small, of the Sierpinski set, would generate its own affordances and its own unique ways of realization in the real world. Here a quotation from Le Page (1998) would be appropriate. He considers the mismatch between a real world and traditional approach “a theoretical problem” (p. 68). In this connection he cites Strevens (as cited in Kachru, 1982) as follows:

... a central problem of linguistic study is how to reconcile a convenient and necessary fiction with a great mass of inconvenient facts. The fiction is the notion of a ‘language’ – English, Chinese, Navajo, and Kashmiri. The facts reside in the mass diversity exhibited in the actual performance of individuals when they use a given language. (p. 23)

Such a view is dissimilar to traditional approaches where researchers endeavour to fit whatever they study into clear forms, formulas and explanations. The belief that one can understand the world by breaking things down into their components and ignoring the relationships between the subsystems out of which a system is composed is known as the reductionist paradigm. The contrary view, asserted by complexity thinking, emphasizes: (a) that the whole is not the sum of its parts; and (b) that the world around us is characterized by irregularity, fragmentariness, fuzziness and even chaos. In this light, in research we should aim at detecting the emergent patterns of the real world rather than confine ourselves to the traditional search for stable regularities.

Complexity thinking is concerned with relationship as unit of analysis (cf. Capra, 2005; Cilliers, 1998; Dent, 1999). Therefore the complexity angle of vision makes the relationship between *constraints* and *affordances*, a matter of our special interest. We might wish to turn our attention to the properties of the multilingual environment that afford for using multiple languages or constrain using most or some of them. Affordances for some languages may be constraints for other languages, particular affordances for some languages may be better perceived and taken up, and for other languages for some reason (we would like to know which) perceived in a worse light. Some affordances within those for a particular language may be better perceived and better picked up, others not perceived at all. And, in some settings, routinely, only some kinds of affordances are taken up, while others are neglected. The questions for sociologists of language might be as follows: Which are the affordances that are overlooked and which are those that are easily detected? What accounts for the particularities of each situation? Specialists in didactics and language acquisition would surely be interested in investigating other issues: Which affordances work better for the acquisition of an L2? Are these different from those which favour an L3? Are such affordances readily perceived? Is there a justified necessity to ensure that particular affordances of language acquisition are effectuated? Such questions would oblige the researcher to assess the degree of percep-

tion and takeup of specific language learning/teaching affordances, and also to identify affordances that are needed but are not in place.

Finally, to illustrate the foregoing, we will give a brief example of a pilot study using the affordances approach carried out with the aim of identifying which affordances are furnished in particular environments for particular aims. While the general elements – language, setting and users – were largely shared with the wider Arabic population of Israel, the special focus of the research task, undertaken by Nour Igbaria, an M.Ed. student at Oranim Academic College of Education, was on a small “triangle.” Igbaria’s (2010) aim was to identify the affordances that are present for the English language (that is for using English) in a particular city, Um Elfahim, most of the citizens of which are Arab citizens of Israel. She conducted ten interviews in a shop selling mobile phones, a place where a researcher has access to people of different walks of life, gender, age and education. The participants were interviewed in their mother tongue, Arabic, about their perception of the presence of English in their environment. In terms of Gibson’s theory, the student was trying to detect their *ambient vision* of affordances for English in this particular socio-political location.

Among the preliminary findings was that most of these affordances are material objects; that is, the English language reaches these citizens of Um Elfahim via the material objects they use daily, rather than through reading articles or any kind of writing or any other kind of use in everyday life. Although these societal language affordances present themselves in this locality without distinctive marking for men or women, females seemed to effectuate more affordances for English than the males: they mentioned English perceived by them on clothes, in names of shops, on bags, and so on. Thus, the study detected a particular manifestation of affordances (material objects). The study also alerted us to a possible trend: The more educated participants perceived more affordances for English. The possible explanation for this correlation is that the more educated citizens of the town encounter English more, in the context of their academic studies, than those who study less. Adolescents show more interest and notice for English affordances. They listen to music and watch videoclips in English. Igbaria (2010) came to the conclusion that age differences and level of education (probably, more correctly, length of studies) seem to affect the *awareness* of the individual of the affordances relative to English in their environment. We may conclude that the present affordances cluster of this town consists mainly of material culture affordances. Even from this mini ethnological inquiry we may infer a hypothesis regarding the teaching of English in the town in question with respect to different age-groups and their learning environments and about the learning materials they are likely to appreciate and use effectively.

To our mind, not only a complexity approach, but also classic qualitative and quantitative methodologies are possible ways forward. The present article, however, does not seem to us to be the place for the further development of such research possibilities. Rather, we would invite our readers to join us in this enterprise, and would very much welcome suggestions concerning the mounting of specific collaborative studies.

### Conclusions

In this article we have briefly explored the original idea of affordances with a view to understanding how this concept translates into the context of multilingualism research. We have noted that the affordances approach is compatible and associable with the fundamental theories used in this area. We have suggested that virtually all branches of multilingualism studies can benefit from employing the concept of affordances and from drawing on the affordances approach. We have suggested further that language teaching may benefit from particular studies referring to specific situations in concrete, practical terms.

While in our previous publications we have emphasized the explanatory value of affordances, here we direct attention to the need and possibility for researching and exploiting the practical implications of the affordances approach. We have also arrived at the conclusion that the term *affordance* denominates a spectrum of phenomena; the types and manifestations of affordances are many and manifold. We have continued the discussion of the categorization of affordances by claiming that the relevant affordances are actions, objects, possibilities, events, facts and realities, historical events and memories, cultural conditions, emotions and sensitivities, thus physical or emotional phenomena, phenomena of the past, present or future, phenomena of long or short duration, phenomena spread over vast territories or available only in tiny niches.

We have stated that affordances function in sets, each set relating to a particular outcome. Our claim is that sets of affordances are required to be available in order that a given action may be performed, a given goal attained, that each action/goal requires the availability of its own specific set of affordances. Exactly which, how many, and in what configuration affordances need to be present clearly depends on the particular nature of the relevant action- goal, actor(s) and environment.

Finally we have proposed a model integrating affordances and complexity approaches which can serve as a tool for investigation in regard to the multilingualism and to multiple language acquisition. Our string view is that we should make full use of the lens of affordances in our analysis of multiple language learning and use, as we believe that affordances can genuinely shed new light on multilingual phenomena.

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