Have you ever experienced the frustration when not being able to open a packaging as instructed? This experience is part of older people’s daily life when taking their medication. At Lund University, a project has just started to understand the processes about pharmaceutical packaging designed for the elderly, linked with the industrial complexity involved on it.

**Good and bad packaging**

In one example you can easily notice when you have bad packaging in your hands: there is an ‘open here’ sign, and doesn’t matter how hard you try, you cannot open it as the instruction says. And then, what is the next thing to happen? You feel frustrated. Afterwards, you appeal for a knife, scissors or even worse, your teeth to open the blamed packaging. A situation recognizable for all of us.

However, there are certain moments when we have no choice. Or very restricted choices, and that is about medication. You buy and use a medication because you need to: it is a must. You have a disease, a headache, an allergy... you need the treatment and you want the problem to be solved or minimized.

Now imagine yourself with about 80-years old. Trembling hands. Your eyes cannot read anymore very small text as when you did when you were 25. And you live alone and depend on your daily basis medication, composed by 5 different drugs, with, of course, five different bottles.

All of these bottles have different sorts of mechanisms that have been created to avoid your 2-years old grandson to access your medication when you are not around. A simple task of having your pills is then an every day challenge.

Understanding packaging is understanding about the basic concept of having containers to our
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It is also strongly connected with our ways of interaction with products. As pointed out by the World Packaging Organisation (WPO & Pira International, 2008), in our future societies, the development of packaging will be underlined by trends such as the aging of the population, the formation of smaller families, and the awareness of health and environmental. In this scenario, the development of better packaging for the elderly will be even more necessary, and the attention given to development of better packaging for the elderly will be underlined by International, 2008), in our future societies, the interaction with products. As pointed out by It is also strongly connected with our ways of interaction with products. As pointed out by the World Packaging Organisation (WPO & Pira International, 2008), in our future societies, the development of packaging will be underlined by trends such as the aging of the population, the formation of smaller families, and the awareness of health and environmental. In this scenario, the development of better packaging for the elderly will be even more necessary, and the attention given to development of better packaging for the elderly will be underlined by International, 2008), in our future societies, the interaction with products. As pointed out by

The dilemma: child-resistant, but senior-friendly

Cases of old adults not being able to open and use their daily medication are also common, and directly connected with the misuse of packaging, since it is difficult to open child-resistant packages, better than to let the bottles open... and doing so all the protection against child poisoning is gone. For the Healthcare Association (2014), the estimative about the poisoning of the children has a strong connection with the increase of grandparents taking care of kids. The role of the grandparents taking care of raising children is increasing, and so is the importance of child-resistant/senior-friendly packaging.

David Dronneau, Innovation and Technology Head in R&D Clinical Supplies from Sanofi (Healthcare Packaging, 2014), says that “there is a dilemma in keeping the standards between safety and compliance, since more safety features can make drugs more difficult to take”. According to him, "one out of every two patients do not comply with drug-taking instructions, whatever the disease".

Different requirements may be balanced to give all the information but still being readable, to be easy to open but child-resistant, to provide the prescribed dose but avoiding poisoning. A small change in a

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Pharmaceutical packaging design

It is now time to comprehend the role of pharmaceutical packaging and to improve it through design. Packaging has a strong connection with the product, in a way that makes almost impossible to distinguish where the product ends and the packaging begins. Packaging seals the interaction between the consumer and what is going to be consumed. The functions of packaging are enlarged when discussing the containers designed for medication. This may include increasing drug adherence, security at home and at hospitals, being informative and educative about modes of use, storage, being discreet but large enough to contain all the necessary instructions etc. Additionally to what is already common for the industry, there is the implications of the extended life expectation. This impacts on the revision of how the medication is delivery to the elderly, and with that some additional questions can come about modes of use and safety.

Steven Dupuis, in his book Package design workbook: the art and science of successful packaging (Rockport Publishers, 2008), says that what we now consider as a package exists naturally in the bark that surrounds the banana, the cocoon of a butterfly, in an oyster that protects a pearl. Examples that have inspired the mankind to create his own wrappers and that have extended the original concept of packaging as an element of protection to an element of design, communication, brand experience, consumer and culture of a our time.

However packaging is not only about protection, distribution, communication. The packaging fractionates portions of the product, making it easier to be distributed, to be bought, and to be consumed in a convenient mode.

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The dilemma: child-resistant, but senior-friendly

Cases of kids been poisoned by medication are bad, common, and something to be stopped. According to the World Health Organization (WHO, 2008), medicinal drugs were the leading cause of non-fatal poisoning in children in middle and high income countries. In these countries, data from poison control centres and hospitals are better mapped and both, medicines sold over the counter (such as paracetamol or aspirin), and prescription medicines, (such as antidepressants) are included in the list.

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Child-resistant and senior-friendly test in well-developed markets: Europe and United States (Healthcare Packaging, 2014)

In the European Union, every country deals individually with the packaging regulation and common standards are implemented voluntary. Since Poison Prevention Packaging Act in 1970, the United States have implemented procedures to test packaging for toxic or poisoning products with children aged 42 to 51 months and/or 100 people aged 50 to 70 years.

5 minutes test

Senior citizens receive written test instructions prior to testing. Children are not given any introduction about the packages. Both groups are given 5 minutes to open the packaging. After that, children are shown the opening procedures without instruction, and given 5 more minutes to open the packaging. Seniors are given an additional minute to open and reclose a second package.

Child-resistant: At least 85% of the 200 children must not be able to open the package within the first 5 minutes, and at least 80% must not be able to open the package during the testing.

Senior-friendly: at least 90% of the 100 seniors must be able to open the packaging within 5 minutes in order for the packaging to be considered senior-friendly.

Child-resistant and senior-friendly test in well-developed markets: Europe and United States (Healthcare Packaging, 2014)
packaging can mean the difference in the compliance with the treatment prescribed – and in how making patient’s life simple or complicated.

**Time for researching**

THE OLD QUESTIONS about pharmaceutical packaging are still the same, meaning the problems have been perpetuated without feasible solutions. The efforts done till now were all about the child-resistant packages to avoid children of having medication improperly at home. In these aspects, no consensus can be described, since each country defines its own regulations for pharmaceutical packaging, and the gap still remains about design standards in the industry and needs of the elderly.

Additionally to that, we have the new questions, regarding all the trends from the aging societies we will live in. As considered by the Healthcare Packaging (2014), “different disabilities offer different challenges. Package design must include real-life testing, especially with the trend to do more at home, usability is of fundamental importance”.

Based on the described problems, a multidisciplinary group of researchers from the Department of Design Sciences at Lund University, Sweden, is working in a research project that connects three main aspects: first, the *user orientation design*, explained through the Theory of Universal Design, designing medication for people in real life, and considering that now these people are getting older.

Second, the *development process of new packaging*, to understand how is the process within the industry, and in which part the development of the packaging reaches the development of the medication. And finally the third, the *design-driven innovation* methods, expanded in a global perspective for packaging.

The project has just started and is planned to be conducted in the next three years, involving engineers, designers, international companies and, of course, elderly users. The researchers will then try to understand the mindsets within the pharmaceutical companies, and how they could use the design in a better way to be more inspired and innovative when developing packaging for the elderly. It is important to mention it is not an utopic research that ignores the dimensions of a multi-billion market, but it is about having a clear idea of who is the elderly user in the final line receiving medication.

In the end, the outcomes expected should present a clear idea of what has been done in terms of process for developing pharmaceutical packaging and how the user needs have been (and, hereafter, can be) interpreted. In sum with that, new propositions in terms of a design orientation should be done, combining the design for the development of a more innovative process.

*GIANA LORENZINI is one of the international professionals working in the project. She moved from Porto Alegre (Brazil) to Lund (Sweden) in 2014. Currently, Giana is a PhD student, sponsored by the Brazilian Program Science without Borders. Her thesis will combine the analysis of pharmaceutical processes with the understanding of the elderly user when managing packaging.*